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Rhonda Stillman Gilby

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AN EXAMINATION OF INDIVIDUAL
DIFFERENCES IN CHILDREN'S RESPONDING
TO EXPERIENCES OF FAILURE

by

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Submitted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

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• Rhonda Stillman Gilby 1986

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ABSTRACT

The purpose of the present investigation was to examine individual differences in children's responses to an achievement-oriented testing situation including a failure experience. Previous research in a number of areas--attribution theory, self-concept, learned helplessness, depression and test anxiety--had confirmed the existence of such individual differences, but several further issues remained to be examined. One hundred fifth and sixth graders participated in the study. In addition to an initial session during which the children completed personality measures assessing test anxiety, depression, achievement-related locus of control and global self-concept, two further sessions during which failure was programmed were also included. The first of these sessions provided information on performance change following a failure experience and ratings of task focus and causal attributions for failure, as well as repeated ratings (i.e., prefailure, postfailure, end of session) of task enjoyment, performance evaluation and future expectancies. The second of these sessions also provided information on performance change associated with failure experiences, but the nature of the task used (a modified version of the Continuous Performance Test) allowed for an investigation of the nature of the performance change occurring, by separating errors of commission and errors of omission. Five issues were addressed: 1) The study allowed for an examination of the overlap among the four personality measures, an examination of the intercorrelations among the set of performance ratings collected, as

well as a further examination of the association between the personality measures and performance change and ratings. 2) With respect to causal attributions, ratings of specific causes as well as causal dimensions were obtained and, in addition to examining the relationship between these and the other variables of the study, the equivalence of different methods of assessing causal dimensions in children was studied. 3) The study explored the processes underlying performance deficits associated with failure, in order to examine motivational and attentional influences. 4) The question of consistency in responding to failure was addressed by looking at performance change on two separate tasks presented on two different occasions. 5) Finally, correspondence between the measures obtained in the experimental sessions, and behaviours seen in school was examined in order to assess the ecological validity of laboratory findings such as these. Significant intercorrelations were found among the set of personality measures, suggesting considerable overlap among groupings of children based upon these measures. There were also strong intercorrelations among the set of ratings that the children made, although these were unrelated to either actual performance or to performance change following failure. Moreover, children entered the session with varying expectancies about performance and made ratings about performance in line with these initial expectancies throughout the course of the session. Test anxiety and depression were most strongly related to the ratings made, particularly those from the end of the session. It appeared that more highly test anxious and depressed children remained focused upon the set of failures, despite an intervening series of successes. Both test anxiety

and depression were also associated with deteriorated performance following failure, particularly for the second failure session. This latter session, however, showed that, in response to failure, depression was associated with an increase in errors of omission, consistent with a depression-associated lack of response initiation, whereas test anxiety was associated with an increase in errors of commission, consistent with an anxiety-associated response activation or disorganization. Performance deterioration was also associated with a lower self-concept, and most strongly with an orientation in which external attributions for achievement successes and ability attributions for achievement failures were made. Thus, this more global measure of attributional style was associated with behavioural deficits, although the more specific ratings made during the session were not. The study provided very limited evidence of the equivalence of different methods of assessing causal dimensions, consistency in manner of responding across sessions and correspondence between laboratory and school behaviour. The study confirmed some of the predictions arising from previous research but disconfirmed others. It highlighted relevant variables that have not previously been considered. Implications for future research in this area are discussed.

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"The true test of intelligence is not how much we know how to do, but how we behave when we don't know what to do"

(Holt, 1964, p. 205)

Being a child almost inevitably involves encountering situations in which "we don't know what to do." Challenge, and a certain amount of failure, are a natural part of our learning process, and consequently a recurring phenomenon in the lives of most children (see Covington, 1984). The consequences of such failure upon the subsequent behavior of the child, then, becomes an important area of study, and one with relevance to the area of academic achievement. As such, it is an area that has received the attention of researchers working from a number of different theoretical bases. One important conclusion that can be drawn from this body of research is that there are substantial individual differences in the ways in which children respond to, or are influenced by, experiences with failure. The major goal of the present study was to examine some of these individual differences, and explore their correlates and possible causes.

This introduction will consist of five parts. The first part will provide an overview of theory and research relevant to an examination of the ways in which children respond to failure. In particular, the literature relevant to children in the areas of attribution theory, learned helplessness, and test anxiety will be reviewed. In the second part, similarities and overlap among these areas will be discussed. The third part of the introduction will describe issues in need of clarification and further study. Fourth, the goals of the present study, and questions examined, will be discussed. Finally, the methodology used to meet these goals will be described.

I. Overview of the Literature

A. Attribution Theory

i) The Theory

An area of social psychology with relevance to an examination of the ways in which children respond to experiences of failure is attribution theory. Attribution theory is concerned with the manner in which individuals interpret the causes of behavior, either their own or that of another person. Weiner and his colleagues have applied attribution theory to classroom experiences (e.g., Weiner, 1974, 1979, 1982; Weiner, Frieze, Kukla, Reid, Rest, & Rosenbaum, 1971); and it is this aspect of attribution theory that is most relevant to the present investigation. In his theory, Weiner proposes that individuals evaluate their achievements as either successes or failures, and then ascribe causes to these perceived successes or failures. These causal attributions produce effects upon subsequent behavior, such as affect experienced, or future expectancies, which may go on to influence further achievement orientation or behavior. In his earliest works in this area (e.g., Weiner et al., 1971), the causes perceived as being most relevant to an explanation of success and failure were ability, effort, task difficulty, and luck. More recently, Weiner (1979, 1982) has acknowledged that the list of conceivable causes of success and failure is infinite, although there is a rather small list from which the main causes are repeatedly selected. Within this list, ability and effort appear to be the most salient of the causes.

In order to deal with the large number of possibly relevant attributions, Weiner has turned his attention to creating a classification scheme or a taxonomy of causes, in order to delineate

3

similarities and differences among causes, and to identify the underlying properties of the causes. In his most recent formulations (e.g., Weiner, 1979), three dimensions of causality have been specified. The first dimension, locus of causality, refers to whether the cause is seen as originating internal to, or within the individual, or whether it originates external to, or outside of the individual. Level of ability or effort expended would represent causes that are internal or originating within the individual, whereas an unfair examiner or an overly difficult test would represent causes that are external to the performing or achieving individual. The second dimension is stability, and it differentiates causes in terms of their temporal nature. Whereas some causes, such as ability or background are relatively enduring or unchanging (i.e., stable) in nature, not expected to change much over time, other causes, such as mood, luck, or effort expended, would be considered unstable, because they would be expected to fluctuate over time. Weiner's third dimension is controllability, which refers to the degree of volitional influence that can be exerted over a cause. Thus, a cause such as effort expenditure or the amount of studying accomplished would generally be seen as falling under the volitional control of the actor in an achievement situation. Ability, luck, or task difficulty, on the other hand, would not generally be seen as causes that are under one's control.

Weiner's proposed dimensions are important not only for classifying causes but also for their implications for subsequent achievement-related behavior. The locus of causality dimension is proposed to be a determinant of the affective reactions associated

with achieving and affects self-esteem. For example, failure attributed to internal sources may produce feelings of shame or guilt, and a loss in self-esteem, whereas failure attributed to external sources may be more likely to produce feelings of hostility and no such loss. The stability dimension is proposed to relate to changes in expectancies regarding future performance. Expectancy shifts following success and failure would be dependent upon the perceived stability of the cause of the outcome, with a more stable outcome producing a greater degree of certainty that the same outcome will occur in the future. The implications of the controllability dimension relate to sentiments and evaluations of others: A more favourable evaluation would result, for example, from an attribution for another's failure to an uncontrollable, rather than a controllable, cause.

Weiner (1974), and other attribution researchers (Bar-Tal, 1982; Frieze & Bar-Tal, 1980) have also theorized concerning the factors that lead to individual differences in the causal attributions that are made in a particular situation. Both available information about the situation and personal attributional tendencies have been considered to be relevant. Relevant external information could include information about current performance and its relation to past performance history, or to the performance level of others, or information provided about the nature of the task (e.g., very difficult). Among the personal dispositions are certain personality characteristics, such as level of achievement motivation or level of self-concept, some demographic characteristics (race, sex, socio-economic level), and causal schemata, which refer to relatively

permanent beliefs that a person holds about the causes of events (Weiner, 1974).

ii) The Study of Attributions in Children

Most of the studies testing Weiner's hypotheses have been conducted with adult subjects. As Stipek and Weisz (1981) have concluded, the evidence on the relationship between attributions and achievement-related behavior in children is sparse. Much of the research relevant to children has been conducted within a learned helplessness framework, and will be reviewed below.

Developmental differences.

An important consideration that arises when studying children, and one that is absent when studying adults, relates to the fact that the use of causal attributions, and their interrelationships with other achievement-related behaviors as described by Weiner, requires a certain degree of cognitive maturity and logical reasoning that young children may not possess. Developmental differences in the use of causal attributions have, in fact, been found. For example, it has been found that only beginning at approximately ages 9 to 11 years are the concepts of effort and ability clearly differentiated from each other (Kun, 1977; Nicholls, 1978). Nicholls (1979) found that not until approximately 12 years of age were the correlations between attainment and attributions clearly in accord with common sense logic about the causes of success and failure. Preschool children do not use experiences of success and failure cumulatively to form future expectancies (Parsons & Ruble, 1977). Ruble, Parsons, and Ross (1976) found that task ease information, which they provided in order to guide the children into making either internal or external

attributions, had no influence on the attribution or affect ratings of children under 8 years of age.

Thus, children do not necessarily utilize attributions in a manner consistent with that of adults, and the attributional responses and their various linkages in children under 8 years of age may not be either logical or systematic. For this reason, the remainder of this review of the attribution research literature, and the present investigation, will focus on children of approximately nine years of age and older.

Relevant research.

In investigating the dimensions of causality proposed by Weiner, Bar-Tal and Darom (1979) had fifth and sixth graders evaluate an actual test performance as either success or failure, and then endorse causal attributions for their performance outcome. Factor analysis of the attribution data produced two factors, corresponding to Weiner's locus of causality and stability dimensions. The controllability dimension was not isolated.

With respect to specific causal attributions, Nicholls (1975) found that effort attributions appeared to be a function of the direction of the outcome, and were evoked more for success than for failure. Palmer, Drummond, Tollison, and Zinkgraff (1982) also found, in both a sample of learning disabled and a sample of normally achieving pupils, that effort was judged as more important for determining success than in determining failure on a task. Nicholls (1979), too, found significant correlations between perceived attainment in reading and effort attributions for success, but not for failure. In the Nicholls study, the strongest perceived attainment-

attribution correlations for both success and failure were for ability attributions, followed by luck attributions. Task difficulty attributions did not correlate with perceived attainment.

Other research with children is relevant to Weiner's proposed attribution - expectancy link. Nicholls (1975) found that higher pre-test expectancies followed by failure were associated with attributions to the unstable factor of lack of effort. There were no significant expectancy - attribution correlations for success. Similarly, McMahan (1973) examined the relationship among attributions for induced success or failure and expectancy of future success. McMahan, too, found that expectancy disconfirmation (i.e., failure following an initially high expectancy or success following an initially low expectancy) led to higher attributions to effort and luck (unstable factors) and lower attributions to ability (a stable factor). Task difficulty attributions showed no relationship to expectancy disconfirmation. In addition, attributions to ability and task difficulty (stable factors) were associated with high subsequent expectancies following success and low subsequent expectancies following failure. Attributions to effort and luck (unstable factors) were associated with low expectancies following success and high expectancies following failure. Nicholls' (1975) measure of "feeling good about" a forthcoming test may also be interpreted as a measure of expectancy of future success. As such, it also provides support for an expectancy - stability link, in that the children "felt better about" a forthcoming test if success was attributed to ability (a stable factor), whereas failing children "felt better about" a forthcoming test if failure was not seen as being due to task difficulty (a stable factor).

It should be noted, as Weiner (1983) recently emphasized, that the model proposes that it is the magnitude of expectancy change that will be linked with causal stability, whereas most of the research to date has examined expectancy, not expectancy change.

With respect to the predicted link between locus of causality and affect, Nicholls (1975) found that satisfaction with performance was greatest when success was attributed to ability (an internal factor) and not attributed to task difficulty (an external factor). Effort attributions for success were not related to satisfaction, however, and no attribution - satisfaction relationships for the failure condition were reported. Ruble et al. (1976) also examined the affect - attribution link. Among the oldest children studied (10-12 years), rated level of affect (i.e. happiness) was found to be stronger when low norms (producing internal attributions) were provided by the experimenters than when high norms were provided. Children felt better about succeeding at a task that was believed to be difficult for most children, and felt less bad about failing at such a task.

Other research is relevant to Bar-Tal's (1982) theorizing concerning the antecedents of causal attributions. Past history information and social comparison information appear to be utilized by children (fourth through twelfth grade) in the same logical manner as adults have been found to do when making causal attribution (Frieze & Bar-Tal, 1980). For example, outcomes consistent with past outcomes were relatively more often attributed to stable factors such as ability and task difficulty than inconsistent outcomes. Outcomes similar to everyone else's were attributed to the task or the teacher,

whereas those at variance with the outcomes of others were attributed to luck.

Personal characteristics have also been examined as antecedents to causal attributions. Bar-Tal, Raviv, Raviv, and Bar-Tal (1982) had children make attributions for success or failure on examinations administered in three subjects in the course of a school trimester. They were able to assess the extent of consistency between attributional patterns obtained from two tests in the same subject and between two tests in different subjects, and thereby, to examine an individual's tendency to a particular attributional style. Bar-Tal et al. found consistency in an individual's attributional pattern, both for tests in the same subject and for tests in different subjects. The degree of consistency was greater when the individual received the same perceived outcome on the two tests (i.e. two successes, or two failures) than when different outcomes were received (i.e. one success and one failure).

Certain personality characteristics have also been studied as predispositions to a particular attributional style. Weiner (1974) has emphasized need for achievement as a characteristic markedly influencing causal ascriptions. He reports that both correlational and experimental studies have established that individuals classified as high or low in need for achievement have disparate attributional patterns, with individuals high in need for achievement attributing success to internal causes, and those low in need for achievement attributing failure to internal causes. This research, however, has not been extended to children. As Frieze (1980) states, however, there is no consensus on how best to measure achievement motivation. In fact,

Hill (1972) has offered an interpretation of test anxiety in children which incorporates the Atkinson approach to achievement motivation. According to this interpretation, high test anxiety is equated with a strong fear of failure and motive to avoid failure, indicating a low need for achievement. Test anxiety scales have been used by some researchers as measures of achievement motivation (e.g., Arkin, Detchon, & Maruyama, 1981). The test anxiety literature relevant to this study will be reviewed and discussed in a later section of the introduction.

Self-esteem.

Self-esteem is another personality characteristic that has been associated with a particular attributional style. In attempting to understand the development and maintenance of self-esteem, considerable attention has been given to the ways in which individuals respond to evaluation, since the evaluative attitudes that people hold about themselves will be influenced by the ways in which they process and respond to evaluative information. The attributional patterns, expectancies, affect, and performance of high and low self-esteem individuals following evaluations have been studied, although again, most of the research has been done with adults.

Although there is some evidence in support of a self-enhancement view (i.e., people prefer performance evaluations that enhance their self-esteem) (see Moreland & Sweeney, 1984), a great deal of the available evidence supports a self-consistency model in responding to evaluative feedback (Layden, 1982). Information that is consistent with the prevailing self-concept is attended to and utilized, whereas inconsistent information is ignored or re-evaluated, and is

less impactful upon subsequent cognitions or performance. Thus, high self-esteem individuals appear to respond most to success, and those low in self-esteem respond most to failure. High self-esteem adults making attributions have been found to internalize success outcomes and externalize failure outcomes more than do low self-esteem adults (see Frieze, 1980; Layden, 1982). Ames (1978) and Ames and Felker (1979) studied children and also found that high self-concept children, more than low self-concept children, attributed their success outcomes to high ability. Neither Ames (1978) nor Ames and Felker (1979), however, found differences between self-concept groups in attributions made for failure.

High self-esteem adults tend to evaluate their performance more favorably than do low self-esteem adults, even in the absence of actual performance differences (Shrauger, 1972). Warren (1976) found that low self-esteem males had larger discrepancies between their criteria for successful performance and their perceived performance than did high self-esteem males. Ames (1978) found that high self-concept children experiencing success outcomes engaged in more positive self-reinforcement than did low self-concept children, and Ames and Felker (1979) found that low self-concept children experiencing failure engaged in more self-punishment than did high self-concept children. In a correlational study, Gordon (1977) found that an internal locus of control orientation was associated with high self-concept scores, and Piers (1977) found that high self-esteem children accepted significantly more responsibility for success than did low self-esteem children, although self-esteem did not affect responsibility for failure.

The impact of success and failure upon expectancies for future performance also differentiates between high and low self-esteem adult subjects. High self-esteem subjects, more than low, raise their expectancies following success, whereas low self-esteem subjects, more often than high, lower their expectancies after failure (Ryckman & Rodda, 1972).

Performance differences following failure have also been found to differentiate high and low self-esteem adults. Performance decrements (Brockner, 1979; Cruz Perez, 1973; Ickes & Layden, 1978) and a lack of persistence (Shrauger & Sorman, 1977) have been found in low self-esteem subjects experiencing failure, whereas enhanced performance and greater persistence were reported for high self-esteem subjects in the same situation. Interestingly, however, Ickes and Layden (1978, Study 4) found no impairment in performance following failure associated with level of self-esteem when the attributional tendency to internalize one's failure was measured independently of level of self-esteem. In that study, however, subjects who were predisposed to internalize their failure outcomes did show performance decrements following failure. Brockner and his colleagues (Brockner, Gardner, Bierman, Mahan, Thomas, Weiss, Winters, & Mitchell, 1983) have determined that the amount of failure experienced is also relevant. They found that relative to a no-failure condition in which high and low self-esteem groups did not differ in performance, low self-esteem subjects performed marginally better than did high self-esteem individuals in a 'small-failure' condition, but significantly worse than did high self-esteem individuals when failure was extended. In attempting to explain the performance

differences found between the two self-esteem groups, Brockner (1979) found that a self-esteem by feedback interaction (i.e., performance decrements following failure, relative to success, for low, but not for high, self-esteem subjects) was significant only in the presence of a self-focusing stimulus (a mirror) or in the absence of such a stimulus when the personality variable of dispositional self-consciousness was high.

iii) Summary

In summary, then, the attributional approach emphasizes the attributions for causality that people make after experiencing a success or a failure. It is theorized that these attributions will vary according to their implications regarding the locus of the cause (internal or external), the stability of the cause, and the controllability of the cause. It is also theorized that the type of attribution made will have subsequent effects upon other achievement-related behaviors, including changes in expectancies for future performance, affect related to performance, and evaluation of others. Individuals differ in the attributions that they make, with such individual differences relating to the nature of the performance and the way in which it is perceived to compare both to past performance and to the performance of others. In addition, various characteristics of an individual, including personality traits, demographic traits, and tendency to utilize a particular causal attributional pattern are also theorized to be antecedents to a style of making causal attributions.

The research findings with children are generally supportive of this attribution model, though the research itself is limited. There is some support for Weiner's dimensional analysis of causal attributions

and for the proposed relevance of the locus dimension for achievement - related affect (satisfaction with performance, happiness), and the stability dimension for expectancies for future performance (though there is not evidence concerning expectancy change). It is important to note, however, that the findings concerning attributions for success do not necessarily parallel those for attributions for failure. In many studies, for example, effort attributions appear to be considered as more important determinants of success than of failure.

There is also general support for the model's predictions concerning antecedents of causal attributions. Past outcome history, and perceived current performance of others are compared to one's own perceived current performance, so that attributions can be derived in a manner that is logically consistent, with consistency between past and present outcome relating to the stability of an attribution and consistency between own and other's performance relating to the locus of the attribution.

There appears to be some consistency within individuals with regard to the use of a particular attributional style to explain achievement outcomes. Attributional style differences appear to relate to differences in level of achievement motivation and self-concept. With regard to self-concept, although the research with children is very limited there is some evidence that high self-concept children show a more self-enhancing attributional style and style of evaluating performance than do low self-concept children. These attributional differences between self-concept groups, however, may be more apparent for success than for failure.

B. Learned Helplessness

i) The Theory

Learned helplessness theory is a second theoretical area of relevance to an understanding of individual differences in the ways in which children respond to experiences of failure. Learned helplessness theory proposes that a state of helplessness develops from the perception of an independence between responding and the outcomes in a situation, resulting in a belief in uncontrollability which generalizes beyond the immediate situation (Seligman, 1975). The characteristics of learned helplessness include motivational, cognitive, and affective disturbances. The motivational disturbance involves a retarded initiation of voluntary responding, presumably due to an expectation of failure. The cognitive disturbance involves a belief in the inefficacy of responding and a difficulty in subsequently learning that responding can succeed in producing a particular outcome, because of interference from the prior learning of uncontrollability. Affectively, negative emotionality and depression result.

The initial helplessness experiments (e.g., Overmeir & Seligman, 1967; Seligman, Maier, & Geer, 1968) utilized animals, and found that exposure to uncontrollable aversive stimulation in the form of electric shock subsequently interfered with the acquisition of escape-avoidance learning in a shuttle-box. More recently, the model has been applied to research with human subjects. Typically, subjects are exposed to a helplessness-inducing experimental manipulation in a training phase, and helplessness is assessed in a testing phase that follows. The helplessness inducing manipulations utilized with humans have included exposure to uncontrollable aversive stimulation, such as noise or shock

(e.g., Miller & Seligman, 1975, 1976), exposure to non-contingent feedback on problem-solving tasks (e.g., Roth & Bootzin, 1974) and presentation of insoluble problems (i.e., failure) (e.g., Dweck & Repucci, 1973). Thus, there are studies within the learned helplessness tradition that have exposed human subjects to failure and examined the consequences of such an exposure upon subsequent performance and behavior.

Whereas the research with animals had produced fairly clearcut support for the model, results from the research with humans had not been as straightforward or consistent (see Coyne & Gotlib, 1983; Miller & Norman, 1979). In an attempt to help explain some of the contradictions apparent in the human literature, Seligman and his colleagues have recently reformulated the learned helplessness model (Abramson, Seligman, & Teasdale, 1978), emphasizing the way in which the subject perceives and experiences the noncontingency presented, rather than the objective noncontingency itself. An attributional model has been added to the theory, with the causal attributions made in response to the perceived response - outcome independence highlighted as being important in determining the nature, generality and chronicity of the helplessness deficits manifested.

In the reformulated model, it is proposed that, once an objective noncontingency occurs and is perceived, an attribution for the noncontingency will be made. The nature of the attribution made will have consequences with regard to expectations concerning future noncontingency, and it is these expectations that are the important determinants of any learned helplessness deficits occurring.

Similar to Weiner's model, three orthogonal dimensions of causal attributions are considered relevant. The first dimension, internality-externality, is similar to Weiner's locus of causality dimension.

Personal helplessness, resulting from an internal attribution, develops when an individual believes that the noncontingency (failure) is more likely to happen to himself or herself than to relevant others.

Universal helplessness results when an individual perceives that there will be response-- outcome independence (failure) for anyone who is in the situation, and represents an external attribution. Though it is proposed that the cognitive and motivational deficits will occur with both personal and universal helplessness, lowered self-esteem is proposed to result only from personal helplessness. The second dimension is stability-instability and, similar to Weiner's stability dimension, relates to beliefs about the long-lived or recurrent nature of the cause. Chronic, or extended, helplessness deficits result from a belief in a stable cause. Departing from Weiner's model, Seligman's third dimension is globality-specificity. This dimension reflects the degree to which a cause is perceived to operate in a wide variety, as opposed to a circumscribed set, of situations. Overall level of intelligence would represent a global factor, and could be presumed to affect performance across a broad range of situations. Mood or level of competence on a particular test are more specific factors, and would be expected to influence performance in a smaller set of situations. The generality of the helplessness deficits occurring, then, is dependent upon the globality of the attributions made, with generalized helplessness resulting from global attributions.

ii) The Study of Learned Helplessness in Children

Research on learned helplessness in children has had, as a major focus, the investigation of individual differences in susceptibility to helplessness deficits. Typically, a failure experience is set up as a helplessness induction, and subsequent performance and/or cognitions about performance are used as indices of helplessness. (It should be noted, however, as Kramer and Rosellini (1984) have pointed out, that the classic demonstrations of learned helplessness have all employed a triadic design, in which the performance of a group receiving response noncontingent outcomes as a pretreatment is compared with that of a response contingent group, as well as to a control group, in order to demonstrate that helplessness deficits arise specifically from the noncontingency. With the exception of the Kramer and Rosellini study (to be discussed below), the research investigating learned helplessness in children has not employed the triadic design, and therefore is not actually investigating learned helplessness in the classic sense.)

Several characteristics have been found to differentiate the helpless child from his or her more "mastery-oriented" counterpart. For example, in an early study Dweck and Repucci (1973) gave children failure experiences on a block design task. Those children whose performance deteriorated most following failure were classified as helpless, and were found to take less personal responsibility for the outcomes of their actions than a group classified as mastery-oriented, who had maintained or improved their performance following failure. In addition, when they did accept responsibility, helpless children less often attributed success or failure to effort expenditure

than did the mastery-oriented children. The attribution information was obtained by having the children complete the Intellectual Achievement Responsibility (IAR) questionnaire (Crandall, Katkovsky, & Crandall, 1965), an instrument that assesses a child's attributions for success and failure in hypothetical achievement situations. Subsequent studies (e.g., Butkowsky, 1981; Butkowsky & Willows, 1980; Diener & Dweck, 1978, 1980; Dweck, 1975; Dweck & Bush, 1976; Goetz & Dweck, 1980; Licht & Dweck, 1984) have also found that helplessness-related deficits, such as disruption or deterioration in performance, little persistence following failure, and low expectancies for future performance are associated with ability attributions for failure but not for success. Also attesting to the importance of attributions, Dweck (1975) found that a group of helpless children, nominated by school personnel because of their expectation of failure and deterioration in performance following failure, showed improved response to failure following an attribution retraining intervention which emphasized effort attributions for failure, relative to a comparable group of helpless children that received only success experiences as an intervention.

Licht and Dweck (1984) classified children as helpless or mastery-oriented on the basis of the number of effort attributions that they made on the subset of items on the IAR that Dweck and Repucci (1973) found to differentiate between their helpless and mastery-oriented groups. They found that, when the early phases of a learning session required dealing with confusing concepts, the helpless children showed poorer mastery of subsequent material than did mastery-oriented children. No such differences occurred, however,

when the same material was not preceded by confusing concepts.

Other recent studies in the area, utilizing the same IAR items to classify children as helpless or mastery-oriented, have found other individual differences. Despite their successful performance (equivalent to that of mastery-oriented children) on the solvable training trials of a discrimination learning task, Diener and Dweck (1978, 1980) found that helpless children showed a progressive decline in the use of effective hypothesis-testing strategies, and a corresponding increase in ineffectual responding over four trials during which only failure feedback was given. Mastery-oriented children maintained or improved their performance over these trials. Differences were also found in the types of elicited verbalizations made while attempting the unsolvable problems. Helpless children made attributions to lack of ability, expressed negative affect, and made solution-irrelevant comments, whereas mastery-oriented children engaged in verbal self-instruction and self-monitoring, expressed positive affect, made positive prognostic statements, and verbalized few attributions of any type. Following the task, mastery-oriented children were accurate in estimating their successes and failures, whereas helpless children underestimated their successes and overestimated their failures. Helpless children also believed that other children would do better than they had done, whereas mastery-oriented children believed that they were doing better than other children would do. Helpless children had lower expectancies concerning future performance, made fewer ability attributions for success, and showed a greater decrease in ratings of their performance after versus before failure than their mastery-oriented counterparts.

Kramer and Rosellini (1984) studied learned helplessness in fifth and sixth graders using a triadic design. Children exposed to response contingent outcomes during a pretreatment, button-pressing task showed a facilitation effect on the problem-solving test trials, relative to both the noneontingent and control groups, which did not differ. Thus, facilitation effects associated with contingency, rather than helplessness deficits associated with noncontingency were demonstrated. The IAR scale was also administered in this study.

Whereas contingency had a facilitative effect on performance regardless of attributions, the effects of noncontingency were modulated by the IAR attributions. A helplessness effect was demonstrated among the noncontingent children who made internal attributions for failure on the IAR, whereas performance was facilitated among the noncontingent group who made external attributions for failure.

Other research on learned helplessness in children has found certain groups to be more susceptible to helplessness deficits than other groups. Fifth graders more than kindergarten, first, or third graders (Rholes, Blackwell, Jordan, & Walters, 1980), mentally retarded more than nonretarded (Weisz, 1981), poor readers more than average or good readers (Butkowsky, 1981; Butkowsky & Willows, 1980), and girls more than boys (Dweck, Goetz, & Strauss, 1980; Licht & Dweck, 1984), have been found to be likely to show helplessness-related characteristics such as poor performance, low persistence, low expectancy of success, less recovery, and ability attributions following failure.

iii) Depression

The reformulated learned helplessness theory has also provided a model of depression. Abramson, Seligman, and Teasdale (1978) proposed that depression consists of four classes of deficits: motivational, cognitive, self-esteem, and affective. The motivational deficits, involving retarded initiation of voluntary responding, are reflected in the passivity, intellectual slowness, and social impairment of depression. The cognitive deficit, involving difficulty in learning that responses produce outcomes, is reflected in the negative cognitive set of the depressive, involving beliefs that failure is inevitable. Lowered self-esteem, a hallmark of depression, results from internal attributions for the helplessness (i.e., personal helplessness). Depressed affect is proposed to result from an expectation that bad outcomes are inevitable (i.e., either highly desirable outcomes are improbable, or highly aversive outcomes are probable). The generality of the depressive deficits will depend on the globality of the attributions for helplessness, and the chronicity of the depressive deficits will depend on the stability of the attributions for helplessness.

There is a large body of research with adults that is relevant to the learned helplessness model of depression (see Coyne & Gotlib, 1983). It provides only limited support for the model. A review of the literature, however, does show that depressed adults, relative to nondepressed adults, are often more negative in their recall of feedback given on laboratory tasks, make more negative self-evaluations and make more internal attributions for failure in laboratory or hypothetical situations.

In contrast, research into childhood depression is still in its preliminary stages (Kashani, Husain, Shekim, Hodges, Cytryn, & McKnew, 1981), and mostly has been generated from observation of symptoms, rather than deriving from a conceptual model. Thus, in the childhood literature the learned helplessness paradigm has only recently been related empirically to depression (Kashani et al., 1981).

Depression in children has been found to share many of the features of adult depression. Many of these are characteristic of the learned helpless state. Dysphoric mood, anger, self-directed hostility, and shame, and certain psychosomatic complaints (Blumberg & Izard, 1985; Leon, Kendall, & Garber, 1980), as well as increased levels of objective and subjective life stress (Mullins, Siegel, & Hodges, 1985) have been found among children classified as depressed. Low self-esteem is another correlate of childhood depression (Kaslow, Rehm, & Siegel, 1984; Strauss, Forehand, Frame, & Smith, 1984). Depressed children have been found to show both impersonal and interpersonal problem solving deficits (Blumberg & Izard, 1985; Kaslow et al., 1984; Kaslow, Tanenbaum, Abramson, Peterson, & Seligman, 1983; Mullins et al., 1985; Sacco & Graves, 1984; Strauss et al., 1984), as well as lower expectations concerning, and more negative evaluation of performance (Kaslow et al., 1984; Sacco & Graves, 1984). Attributional style is also relevant. Depression in children has been associated with an external locus of control (Lefkowitz & Tesiny, 1980; Moyal, 1977; Mullins et al., 1985; Tesiny, Lefkowitz, & Gordon, 1980), and with a "learned helpless" attributional style (i.e., internal-stable-global attributions for failure and external-unstable-specific attributions for success) (Blumberg & Izard, 1985; Kaslow et al.,

1984; Leon et al., 1980; Seligman, Peterson, Kaslow, Tanenbaum, Alloy, & Abramson, 1984). Strauss et al. (1984) found a higher level of anxiety among a group of depressed children. Possible motivational deficits, in the form of inattentive and passive behaviour in the classroom (though not in the form of response initiation deficits on the Porteus mazes) has also been found among depressed children (Leon et al., 1980; Strauss et al., 1984).

Although Dweck has not measured level of depression in her studies, Diener and Dweck's (1980) study of the helpless child's processing of success showed that the helpless group of children shared many of the characteristics that have been proposed to be relevant to depression, including a negative cognitive set, selective attention to the negative aspects of situations to the relative exclusion of positive events, and underestimation of correct responding. It has been hypothesized, in fact, that the set of cognitions and behaviors that have been associated with learned helplessness in children may leave a child vulnerable to a psychological disorder such as depression (Dweck, 1977).

iv) Summary

In sum, then, learned helplessness theory postulates that in response to experiences with uncontrollable outcomes, of which failure experiences are an example, a state of learned helplessness consisting of motivational, cognitive, affective, and possibly self-esteem deficits may develop. Attributions made for the uncontrollable outcomes mediate between the experience and expectations concerning future outcomes, which, in turn, influence the development of helplessness-related deficits. Stable attributions produce chronic helplessness

deficits, global attributions produce generalized helplessness deficits, and although both internal and external attributions produce the motivational and cognitive effects associated with helplessness, only internal attributions produce a lowering of self-esteem. The learned helplessness model has also provided a model for depression, and its associated phenomenological aspects.

The major portion of the research on learned helplessness involving children has not been concerned as much with supporting predictions from the model as it has with identifying groups of helpless and non-helpless (i.e., mastery-oriented) children and studying differences between these groups. This research has shown that helpless children, although of apparently equal ability to mastery-oriented children, process information about their failure performance in a self-deprecatory manner, and in ways which suggest that they perceive having little influence over changing this negative state of affairs. Though they are willing to take the blame for poor performance, being more likely to attribute it to aspects of their own character which they are unable to change (e.g., ability, as opposed to effort), and overestimate its occurrence, they underestimate positive outcomes, and give themselves little credit for success. Helpless children evaluate themselves negatively in comparison to their peers.

Helpless children, as well, show a serious deterioration in problem solving behavior, and hence, performance, following an experienced failure or even a confusing experience. As opposed to mastery-oriented children, who remain optimistic and make use of self-instructional strategies which are conducive to problem solving,

helpless children dwell on the negative aspects of the situation, or lose their task focus, and therefore work against effective problem solving.

Finally, there is growing evidence indicating that depression in children also may be associated with characteristics that have been found to relate to learned helplessness in children.

C. Test Anxiety

i) The Theory

Test anxiety theory is the last theoretical area relevant to the concerns of the present study that will be discussed. Test anxiety theory attempts to account for the typically poor performance of highly test anxious persons on tests or in test-like situations, particularly under stressful, evaluative conditions. Liebert and Morris (1967) have posited that there are two distinct components to the state of test anxiety, one cognitive and the other emotional. Worry is the cognitive component of the anxiety experience, reflecting concerns about one's performance and the consequences of failure, negative self-evaluation, evaluation of one's ability relative to others, focus on social-evaluation cues, and rumination over choices. Emotionality refers to the affective-physiological experiences generated from increased autonomic arousal. Research has shown that worry scores show a consistent negative relationship to both performance expectancies and actual performance on a cognitive task, whereas no consistent relationship has been found between emotionality and expectancies or performance (see Deffenbacher, 1980).

The recent emphasis in the test anxiety literature (e.g., Wine,

1971, 1980, 1982) has been towards a cognitive-attentional basis as an explanation of the performance deficits of the highly test anxious, with a focus on the different attentional foci of high and low test anxious persons in evaluative situations. It is theorized that whereas the low test anxious person focuses on task-relevant variables while performing a task, cues which make evaluation and possible failure salient elicit worry in the highly test anxious. For these persons, then, attention is divided between the self-preoccupied worry cognitions and the task cues. Since adequate performance on a test generally requires full attention, the performance of the highly test anxious individual suffers.

ii) The Study of Test Anxiety in Children

The literature on test anxiety in children has also focused on individual difference factors relating to the anxiety experience and leading to the performance deficits found. Despite ample evidence that highly test anxious children do not perform as well on tests as their less anxious counterparts (e.g., Hill, 1972; Hill & Sarason, 1966; Nottelman & Hill, 1977; Stevenson & Odom, 1965), with increasingly strong debilitating effects across the elementary and secondary school years (Hill & Wigfield, 1984), there is evidence that this is not a result of ability differences between the groups. For example, Hill and Eaton (1977) found that highly anxious fifth and sixth graders were able to match the performance of low anxious fifth and sixth graders on math problems that were presented under conditions in which success was highly likely. When problems were part of a condition in which failure was also experienced, however, high anxious children took longer to complete their problems, were less accurate,

and cheated more than the low anxious children. Other evidence (Dusek, Kermis, & Mergler, 1975; Eaton, 1979; Hill & Wigfield, 1984; Plass & Hill, 1979) also indicates that decreasing the evaluative nature of the testing situation by presenting the test under game instructions or by removal of time pressure improves the performance of high anxious children to a level equivalent to that of low anxious children.

Attention focusing has been studied as a mediating influence in the performance differences of high and low test anxious children, and it appears that the high test anxious child's performance suffers because attention is not focused on the task at hand. In a clearly evaluative situation, high test anxious children show more off-task behavior, in the form of off-task glancing, than do low anxious children (Nottelman & Hill, 1977).

Irrelevant information on achievement-type tests interferes with the performance of high anxious children to a greater degree than it does for low anxious children (West, Lee, & Anderson, 1969). On an incidental learning task with instructions to the children to remember the location of central items in a stimulus array, high test anxious children have lower central learning scores, but higher incidental learning scores than do low anxious children (Dusek et al., 1975). Strategy aids, such as labelling of the central stimuli, facilitate the high test anxious children's central learning performance, bringing it up to a level equivalent to that of the low test anxious children (Dusek, Mergler, & Kermis, 1976), suggesting that the high anxious children are not employing an efficient strategy on their own.

Potter (1976) found that test anxious children are particularly oriented to the social-evaluative figure in the classroom whereas other evidence points to the self-preoccupation of highly test anxious children. Following completion of a cognitive task administered under either evaluatively stressful or nonstressful conditions, children were given the opportunity to help another child (Wine, 1979). Low test anxious children's helping behavior did not vary with the evaluative condition. High test anxious children, however, were less likely to help in the evaluative than the nonevaluative condition, presumably because their self-preoccupation elicited by the evaluation interfered with attentiveness to the cues demonstrating the needs of other people. Also, Wine (1979) found that when expecting a difficult examination, high test anxious children spent more time sitting idly and less time working quietly or communicating with other children than low test anxious children did. Wine concluded that this reflected the interfering effects of self-preoccupation, and an inward focus. No such differences were found in a class in which no examination was expected.

Hymel (1981) examined the relationship between self-reported test anxiety and attributions for success on actual report cards in a group of junior high school students. She found that test anxiety was positively related to external attributions for success, including easy grading, luck, easy courses, not having much else to do, and receiving extra help. Anxiety, however, was unrelated to internal attributions, including effort, ability, and interest in the course taken. Thus, the more anxious children tended to view their success as being controlled by factors outside of themselves and over which they may have felt

that they had no control. Anxiety scores were also found to be negatively related to actual grades, reported satisfaction with grades received, and with expected grades for the next quarter. Nicholls (1976) found that higher test anxiety in girls was associated with attribution of failure to ability, and attribution of success to teacher assistance; whereas low test anxiety in girls was associated with attribution of success to ability and attribution of failure to bad luck. For boys, however, level of test anxiety was unrelated to attributions, although pleasure in the testing situation was positively associated with ability attributions for success, and negatively associated with ability attributions for failure.

iii) Summary

In summary, then, test anxiety theory posits that certain individuals respond to evaluation (and particularly failure) in achievement situations with an increase in emotionality and an increase in worry. Worry, the cognitive component of the test anxiety experience, shows a negative relationship to both performance expectancies and performance in achievement settings. The cognitive-attentional explanation of test anxiety effects posits that worry cognitions interfere with task focus, and consequently, adequate performance.

The test anxiety research with children supports the cognitive-attentional test anxiety model. The research shows that highly test anxious children, although of equal ability to their less anxious counterparts, perform poorly under test conditions which involve evaluation and time pressure. In such situations, the research does suggest that the highly anxious child's performance suffers because of

self-preoccupation and an inability to devote full attention to the critical aspects of the task at hand. Highly test anxious children are more likely to view failure as resulting from internal causes, yet make external attributions for success.

II. Similarities Among the Literatures

This literature review illustrates that despite their distinct theoretical bases and often different foci, researchers studying attributions for achievement, self-concept, learned helplessness, depression, and test anxiety in children have been examining similar issues and problems. The empirical literature reveals many striking commonalities in both methodologies and findings.

Attribution researchers have utilized failure experiences in order to examine the ways in which the causes of such evaluative feedback are perceived and their subsequent effects upon achievement-related behaviors. Self-concept researchers have considered the processing of failure as both an important antecedent and consequent of one's evaluation of oneself. Failure has been used almost exclusively as a helplessness induction in studies of learned helplessness in children because it is assumed to provide an experience of response-outcome independence or uncontrollability. Finally, failure also makes an evaluative situation stressful, and has therefore been utilized by researchers in the area of test anxiety to elicit the worry and anxiety found in the highly test anxious. Assessments of causal attributions, affect, expectancies for future performance, actual performance, and evaluation and recall of performance following failure have all been made by researchers in these various areas.

Theoretically, too, these areas are interrelated. In addition to learned helplessness providing a model for depression, lowered self-esteem is considered to be both an antecedent of an attributional style in the attribution model, a concomitant of personal helplessness in the helplessness model and a hallmark of depression. Achievement motivation, another antecedent within the attributional area, has theoretically been related to the concept of test anxiety.

The empirical findings coming out of these different bodies of literature are also very similar, although they may have been interpreted in different ways. Low self-esteem, helpless and highly test anxious children all share a number of characteristics and behaviors when coping with an experience of failure.

One important commonality is the inability to perform up to one's capabilities following an experience with failure. Disruption in performance, and/or a lack of persistence are findings common to these three areas. Other aspects of behavior are also similar. The solution-irrelevant comments which accompany the deteriorated performance of helpless children are consistent with the inappropriate, off-task focus of the highly test anxious. Low self-concept has been associated with a greater degree of anxiety and tension in a failure situation, and there is some evidence from self-concept research that self-focused attention may also be responsible for performance disruption among the low self-esteem group. Helpless, low self-esteem and depressed children have also been found to evaluate their performance with a negative bias, recalling it to be poorer than it actually was, and estimating it to be poorer than the performance of others in the same situation, despite an absence of any objective

difference. Following failure, helpless and low self-esteem subjects, are less satisfied than their mastery-oriented or high self-esteem counterparts with a similar level of performance. Low self-esteem and depressed subjects have also been found to be less self-rewarding and more self-punishing than their high self-esteem, non-depressed counterparts in a similar situation.

Another similarity among these areas is the common finding of a self-effacing attributional pattern, involving taking credit for one's failure and/or not taking credit for one's successes. This pattern is more characteristic of helpless, low self-esteem, depressed and high test anxious children than of their mastery-oriented, high self-esteem, nondepressed and low test anxious peers. (Indeed, following from the results of Ickes and Layden's (1978) study, this shared attributional pattern may be the common underlying variable that links these other empirical similarities). The attributional data coming out of the helplessness, self-concept, depression, and test anxiety areas also provides support for some of the theoretical linkages within Weiner's model. The associations between ability attributions and performance expectancies, affect, pleasure in the testing situation, and negative comparison to others found in this research supports predictions from Weiner's model that are related to stability-expectancy, internality-affect, and utilization of information relevant to performance.

Finally, the individual difference factors themselves (i.e., helplessness, depression, self-esteem, test anxiety) are not independent. Self-esteem has been found to relate significantly and negatively to depression in children (Kovacs, 1983; Moyal, 1977; Schwartz, Friedman, Lindsay, & Narrol, 1982). Low self-esteem is

associated with greater reporting of anxiety following failure. Dweck (1975) found that her helpless group of children were more anxious than her mastery-oriented group, based upon two subscales of the Test Anxiety Scale for Children. Several investigators (e.g., Gatchel, Paulus, & Maples; 1975; Miller & Seligman, 1976) have found that a helplessness induction produced increases in anxiety, as well as depression, in adult subjects. One factor of the Test Anxiety Scale for Children that has been isolated in factor analytic studies of the scale is a "comparative poor self-evaluation" factor (Feld & Lewis, 1969), involving children's derogation of themselves relative to other children. In addition to being similar to Diener and Dweck's (1980) finding of their helpless group's negative comparison of self relative to other children, this evaluation of self relative to others is also an important aspect of one's overall self-concept.

How can the similarities and overlap within these bodies of literature be reconciled? Various suggestions have been offered by others who have recognized this overlap. Phillips, Pitcher, Worsham, and Miller (1980) proposed that if test anxious children are especially sensitive to failure and negative evaluation, it is likely that a large proportion of test anxious children might fall into the learned helpless category. Thus, Phillips et al. were suggesting that high test anxious children may form one subset of the total group of helpless children because they are more likely to interpret situations as being failures, or to perceive response-outcome independence. Similarly, Ickes and Layden (1978) suggested that the self-effacing style of attributing associated with a phenomenon such as low self-esteem may precipitate or predispose one to interpret situations in a manner that leads to

the development of learned helplessness and helplessness-related deficits. Schwarzer, Jerusalem, and Stiksrud (1984) view anxiety and helplessness as separate stages along a continuum of reactions to failure. Debilitating anxiety results from a continued threat of failure, whereas helplessness is a result of a feeling of complete loss of control.

Lavelle, Metalsky, and Coyne (1979), however, have questioned whether subjects identified as helpless in the research are, in fact, displaying learned helplessness. They state that the interference with task performance produced by experimenter-induced failure in helplessness research is not ipso facto proof of the specific underlying cognitive and motivational deficits postulated by learned helplessness theory. They emphasized that test anxiety theory also predicts that highly test anxious individuals will be particularly prone to be debilitated in a laboratory helplessness induction. In their study of university students, they found that subjects with high test anxiety scores showed deterioration in performance in a typical laboratory helplessness induction, whereas subjects chosen on the basis of low test anxiety scores did not. Thus, Lavelle et al. argued that the research has not adequately separated out the phenomena of learned helplessness and test anxiety. Similarly, Silver Wortman and Klos (1982) describe a number of other explanations besides learned helplessness including egotism, negativity, cognitive withdrawal, detection of deception, and faulty inferences drawn from the training task that may account for performance decrements following failure.

Recently, Dweck and Wortman (1982) have put forward the most thorough integration of the overlap found among these separate bodies of literature. Dweck and Wortman noted that, although the fields of achievement motivation (attribution theory), test anxiety, and learned helplessness have developed independently of one another, investigators in the areas have been studying similar phenomena. They dealt with these similarities by proposing that two categories of individuals' responses to stressful achievement situations exist -- maladaptive and adaptive responding. From a synthesis of a collection of research findings similar to those discussed above, Dweck and Wortman derived a set of characteristics which differentiate maladaptive from adaptive responders. Maladaptive responders both dislike and worry about performing in achievement settings, and facing the evaluation involved therein. They have difficulty maintaining their motivation and concentration when working on difficult achievement tasks. They tend to show a self-focus, rather than task focus, when in such a situation, and persistence and/or performance levels decrease when the maladaptive responder experiences difficulty or failure while performing. Maladaptive responders have low self-esteem and show self-doubt concerning themselves and their capabilities. They interpret and recall information and feedback concerning the self in a negative manner, and hold low expectancies concerning future performance in achievement situations, particularly following failure. Finally, maladaptive responders blame themselves for setbacks, such as failure, seeing these as evidence of their own inadequacy. Low self-concept, high test anxious, and helpless

children would appear to fall into the category of maladaptive responders.

Adaptive responders, in comparison, enjoy the challenge involved in difficult achievement situations. They are able to sustain motivation and concentration fully in difficult achievement settings, and are able to keep their focus on task. Over time, even when faced with failure, performance levels are maintained or improved. Adaptive responders are confident of their own abilities, and view difficulties or failures encountered as temporary and surmountable. High self-concept, low test anxious, and mastery-oriented children would appear to fall within the category of adaptive responders.

III. Areas in Need of Further Investigation

Dweck and Wortman's (1982) paper provides a useful integration of the bodies of literature relevant to the present examination of individual differences in the ways in which children respond to experiences of failure. Several issues remained to be further investigated and clarified, however. This section of the introduction will elaborate on five such issues upon which the present study focused.

1) Interrelationships Among These Areas

a) Personality Measures

The large degree of similarity in the research and findings in the attribution, self-concept, learned helplessness, depression, and test anxiety areas indicates that an investigation of the interrelationship among these areas is warranted. Despite differences

in the methods used to classify level of self-esteem, helplessness, depression, and test anxiety, overlap among these personality variables would indicate that researchers in the different areas may have been studying the same phenomenon. Dweck and Wortman's (1982) integration of research findings from these separate areas suggests that the groups obtained from classification on the basis of measures of helplessness, depression, test anxiety, and self-concept may overlap. To date, however, aside from a few studies showing correlations among measures of self-esteem, depression, and locus of control, there has been no empirical examination of the relationships among the entire set of personality variables, in order to examine the extent of their co-existence.

b) Characteristics of Maladaptive Responding

Dweck and Wortman's (1982) set of characteristics which differentiate maladaptive from adaptive responders can be integrated into the following list of six: i) lack of persistence and/or performance decrements following failure, ii) dislike of, and worry about, performing in achievement or evaluation settings, iii) difficulty in concentrating in challenging achievement settings, with a tendency to focus attention on the self, rather than on the task, iv) self-doubt and negative interpretation of information concerning the self, v) self-blame and a viewing of failure as resulting from one's own lack of competence, and vi) low expectancies concerning future performance in achievement settings.

There has been no empirical examination to date, however, of the co-occurrence of this entire set of variables within a group of children, nor an examination of the ways in which they relate to the

personality variables which Dweck and Wortman considered to be relevant to maladaptive responding.

2) Causal Attributions

The study of causal attributions in the research with children has, in many ways, been limited. The results of this research must be interpreted with Weiner's (1983) recent cautions in mind. Weiner (1983) has stated that a serious shortcoming of much attribution research is the limited number of causal attributions utilized. Most research discussed above has focused on single causes, utilizing the standard set of four attributions--ability, effort, task difficulty, and luck (McMahan, 1973; Nicholls, 1975, 1979; Butkowsky & Willows, 1979; Rholes et al., 1980; Ruble et al., 1976). Others have also added teacher or agent of evaluation (Dweck, 1975; Frieze & Bar-Tal, 1980). The use of dimensions of causality, which Weiner introduced in order to avoid reliance on only a small set of specific causes, has not been incorporated in much of the literature with children.

In his attribution research, Weiner (1979, 1982) has included three dimensions of causality - locus of causality, stability, and controllability. Abramson et al. (1978) also stressed the importance of three dimensions--internality, stability, and globality. Moreover, as Abramson et al. (1978) discuss in a footnote to their paper, there have been two slightly different interpretations of internality. Abramson et al. have used a self-other dichotomy as the criterion of internality (i.e. a belief that outcomes are more or less likely to happen to the self than to relevant others), whereas others, such as Weiner, have conceived of the internality dimension as based upon whether a cause is seen to reside within or without the individual.

There are actually four or possibly five dimensions of causal attributions that may be relevant, then. The relationship between these dimensions and the other characteristics considered to be relevant to maladaptive responding in children has yet to be investigated.

Various methods have been utilized to assess attributional dimensions. Sometimes single cause ratings are used, in which subjects rate the degree to which each of several possible causes influenced an outcome, and the presumed underlying dimensions of these single causes are referenced. For example, an attribution to ability may be assumed to be evidence of an internal attribution, or a stable attribution. Similarly, Dweck's findings of the importance of effort attributions has been used as evidence for the importance of both the stability and controllability dimensions. When the same cause is used as evidence in support of more than one causal dimension, it is not possible to separate out their effects, however. Another method used is to obtain single cause ratings and combine them arithmetically to extract the underlying dimensions (see Krantz & Rude, 1984). For example, an internality score may be calculated by adding effort and ability ratings (internal causes) and subtracting task difficulty and luck (external causes) from the sum. A third method involves making ratings of the actual conceptual dimensions themselves (e.g., Seligman, Abramson, Semmel & von Baeyer, 1979), rather than single causes. For example, ratings are made of the degree to which the perceived causes of an outcome are considered by the respondent to be internal, stable, global or controllable.

The equivalence of these various methods has not been adequately investigated. Recently, Krantz and Rude (1984), in a study with adults, calculated dimensions using both single causes and dimension ratings and found that choice of causes did not reliably indicate the perceived dimensions. If a dimensional component is to be added to the study of causal attributions in children, it seemed necessary to further investigate the various methods and their interrelationships in children, as well.

3) Underlying Processes

Although self-concept, helplessness and test anxiety theories may predict similar phenomenology in terms of performance deterioration following failure, the specific mechanisms postulated to underly these deficits are very different. As described above, learned helplessness theory proposes that it is the perception of a noncontingency between response and outcome, resulting in a belief that responding will have no effect (i.e., failure is insurmountable (Diener and Dweck, 1978)) that leads to a motivational deficit or "giving up" in the face of failure. Performance deficits, then, would result from a resignation to the fact that there is nothing that can be done to avoid failure, and that there is no use in trying in the situation. Test anxiety theory, however, and some researchers in the area of self-concept (e.g., Brockner, 1979), have postulated that attentional interference is responsible for performance deterioration observed following failure. Performance cannot be adequate because, whether or not the subject is motivated and trying, attention is not fully focused on the task at hand.

As Lavelle et al. (1979) have stated, impaired performance following experimenter-induced failure is a finding that has been demonstrated repeatedly in the research literature in several areas. A more fruitful approach to investigation, they suggest, would be to set up a task situation that would allow for theoretical comparisons between these alternatives. Dweck and Wortman (1982) also have suggested that it would be useful to discriminate among the underlying processes postulated by the different, relevant theoretical traditions. A study that has presented children with a task that allows for differential theoretical comparisons was not available in the literature to date.

4) Consistency in Maladaptive Responding

As pointed out by Lefcourt (1980), in the literature on learned helplessness the focus of most research has been upon the creation of states of helplessness. Little research attention has been paid to the exploration of helplessness as an enduring quality. Similarly, it has not yet been established whether children show a characteristic manner of responding when faced with situations involving experiences with challenge or failure.

Accepting the importance of considering situational influences upon the behavior of the individual in any setting (Mischel, 1968, 1973), there is also some evidence to suggest that individuals may also act in a characteristic manner which generalizes across situations. With respect to the phenomenon of maladaptive responding, it can be noted that some of the personality variables which have been associated with maladaptive responding, such as test anxiety,

self-concept, and locus of control, are considered to be fairly stable across time (Lefcourt, 1980). Also of relevance, Butkowsky (1981) found that boys who had experienced reading difficulties in school displayed aspects of learned helplessness on both a reading and a math task administered in a laboratory setting, relative to boys who were average or good readers in school. Boys who had problems in math at school, however, showed helplessness on the laboratory math tasks, but not on the reading tasks. Bar-Tal et al.'s recent (1982) finding of consistency in attributional patterns obtained from two school tests administered on different occasions during a school term also suggests some consistency in responding to failure. Consistency in the performance decrements following failure, an aspect of maladaptive responding with perhaps the greatest relevance to achievement in school, remains to be studied.

5) Relevance to School Performance

Much of the relevant research reviewed above has examined children's behavior in laboratory settings. Only a few studies have also included measures of the child's actual performance, or teacher-perceived performance, within the classroom (e.g., Dweck, 1975; Weisz, 1981; Palmer et al, 1982). Recently, Silver, Wortman, and Klos (1982) have discussed the problems associated with the artificial nature of experimental manipulations in studies of the learned helplessness phenomenon in humans. It would seem important, then, in order, to improve the applied relevance of the results coming out of the laboratory, to also include relevant measures obtained in the actual life situations of the subjects. With regard to an examination of the

effects of failure upon the performance and behavior of children, school measures would seem to be an appropriate check on the ecological validity of results obtained within the laboratory.

School grades would provide one such relevant school measure. The pattern of characteristics of the maladaptive responder, as described by Dweck and Wortman (1982), could be predicted to have an adverse effect upon performance and achievement in a school setting. Both learned helplessness and test anxiety researchers have concluded that helpless and high test anxious children are of equal ability to their mastery-oriented and low test anxious peers. Dweck and Licht (1980) report that helpless and mastery-oriented children are indistinguishable on standardized measures of intelligence.

Butkowsky (1981), however, found that poor readers are more likely to exhibit helplessness than average or good readers, and Weisz (1981) has found that mentally retarded children are more likely to exhibit helplessness than the nonretarded. Measures of test anxiety are negatively correlated with both IQ and achievement test performance (Dusek, 1980). Bohrnstedt and Felson (1983), in reviewing the literature relevant to school performance and self-esteem in children, found that results are mixed. They concluded that although more studies have found a significant relation between grades and overall self-esteem than have failed to find such a relation, the size of the significant relations has been modest. Depression scores and external locus have been found to correlate negatively with reading and math grades, teacher ratings of work and study habits and classroom achievement, and figure drawing IQ (Tesiny et al., 1980), although again some of the relationships are very small. There is, therefore,

some uncertainty concerning the relationship between school grades and personality variables relevant to maladaptive responding, and very little indication of the relationships between school performance and the performance, cognitions, and evaluations that have been assessed in laboratory studies.

In addition to school grades, teacher ratings of a child's test anxiety and the tendency to give up when confronted with a difficult task can also provide an interface between laboratory and classroom behavior, as well as providing an indication of whether teachers see these two characteristics as overlapping or independent phenomena.

IV. Aims of the Present Study

In line with the five issues in need of clarification discussed above, the present study had the following aims:

- 1) The study attempted to empirically investigate Dweck and Wortman's (1982) construct of maladaptive responding. It examined the interrelationships among the set of behaviors, cognitions and evaluative strategies proposed by Dweck and Wortman as characteristic of the maladaptive responder. It also examined the ways in which the constructs of test anxiety, learned helplessness, level of self-concept, and depression, in the various ways in which they have been studied in the childhood literature, relate to each other, and to Dweck and Wortman's characteristics of maladaptive responding.
- 2) Among the cognitions relevant to the construct of maladaptive responding are the causal attributions that are made for failures experienced. The relationship between maladaptive responding in

children and the causal attributions made for failure were explored more fully than has been the case to date, with all four attributional dimensions of internality, stability, globality, and controllability examined, as well as a set of specific causes. The study, in addition, allowed for the examination of the equivalence of various methods of assessing causal attributional dimensions in children.

3) This study also attempted to explore the processes underlying the performance deficits of maladaptive responding, in order to examine motivational and attentional influences.

4) The question of consistency was also examined in the phenomenon of maladaptive responding by looking at one important aspect -- performance deterioration following failure -- and determining whether there is consistency in this characteristic, within the individual, for two separate tasks presented on two different occasions.

5) Finally, in order to determine whether there is correspondence between school and laboratory performance, measures of school grades and teacher ratings of test anxiety and helpless behavior were collected, and their relationships to the measures obtained within the laboratory were examined.

V. Overview of the Study

Ten - to twelve - year old children, recruited from the local public school system, were seen on three separate occasions. On the first occasion, the children completed a series of personality scales, measuring test anxiety, depression, locus of control with respect to achievement in school, and global self-concept in a group-administered session. School grades and teacher ratings of test anxiety and

helpless behavior (tendency to give up in a difficult situation) were also obtained.

On the second occasion the children were seen individually. During this session, they attempted to complete a series of maze puzzles. The session can be considered to consist of five sets of mazes. The first set of mazes were solvable, and were presented as a practice set, under evaluatively non-threatening instructions. The remaining mazes were all presented as components of a test. The second set of mazes, the prefailure set, were solvable and provided a baseline of performance. The third set of mazes, the failure set, actually had no solution. Following the failure, a postfailure set of mazes, solvable and found in pilot testing to be of comparable difficulty to the prefailure set, were presented. The final set of mazes, the success set, were easy mazes, and were included to provide all the children with a final experience of success before leaving the session.

After the practice mazes, following the failure mazes, and again at the end of the session, the children made ratings of mood, enjoyment of the task, evaluation of own performance, perceptions concerning how well their peers would be doing, expectations for future performance, self-reward, and self-punishment. Following failure, specific causal attribution and causal dimension ratings were also obtained. Following all of the mazes, a cognitive interference questionnaire and satisfaction with performance ratings were also obtained.

The data collected during these first two sessions provided information concerning the following:

- 1) the relationship among measures of test anxiety, learned helplessness, depression and self-concept, as they have been defined in the literature. Given the similarities in findings across the research areas, it is predicted that these personality variables will intercorrelate significantly.
- 2) the relationship among the set of characteristics of maladaptive responding, including performance deterioration following failure, dislike of the task, cognitive interference while performing, self-blame for failure, negative interpretation of own performance, and low expectancies for future performance. Following from the work of Dweck and Wortman (1982), it is hypothesized that there will be significant intercorrelations among this set.
- 3) the relationship between the personal measures and the characteristics of maladaptive responding. It is expected that more highly test anxious, learned helpless, low self concept and depressed children will be more likely to demonstrate the characteristics of maladaptive responding.
- 4) the relationship between specific and dimensional ratings of causal attributions in children, and across two methods of obtaining dimensional measures. Though it is assumed that ratings of specific causal attributions will relate to measures of causal dimensions in logically consistent ways, providing for equivalence across methods of assessing causal dimensions, the absence of relevant evidence of such in the research, and the negative findings in the adult literature, do not allow for a clear

prediction on this issue.

- 5) the relationship of school measures to performance in the laboratory. Although much of the importance of the laboratory findings in this area depends upon there being some correspondence between such findings and school behaviour, the limited data and inconsistent results in the literature provide little basis for making a prediction on this issue.

On the third occasion, the children were again seen individually and completed a modified version of the Continuous Performance Test, a test of sustained attention developed by Rutschmann, Cornblatt, and Erlenmeyer-Kimling (1977). The task exposed the children to a series of visual stimuli (i.e., slides of playing cards) presented in rapid succession, and required a response when two successive stimuli were identical, and no response when two successive stimuli were nonidentical. Following two practice trials to establish a baseline level of performance, the children received nonveridical feedback, over the course of a series of trials presented as a test, indicating that they were not performing well. Following these failure trials, the children evaluated how well they were doing. A final set of two success trials was then presented, for which success feedback was given, to allow the children a final experience of success before leaving the session.

The data collected during this third session provided information relevant to the following issues:

- 1) An analysis of the types of errors made on the CPT provided some evidence concerning the processes mediating the performance deficits found. For example, motivational biases, such as these

proposed to underlie deficits associated with learned helplessness and depression, would be predicted to result in a decrease in responding, and, therefore, an increase in errors of omission during failure trials on the CPT would be predicted. Attentional deficits, on the other hand, such as those proposed to underlie test anxiety or low self-concept deficits, would result in confused thinking, and more errors of commission during the failure trials of the CPT session would be predicted.

- 2) Deterioration in performance during the failure trials of the CPT session was compared to deterioration in performance following failure on the mazes, in order to examine consistency in this response pattern. Previous research had not addressed this issue, providing little basis for making predictions. However, given that the relevant personality variable associated with maladaptive responding are considered to be stable, and that some consistency in causal attributional style has been found, it is predicted that consistency across the two sessions in this characteristic will also be found.
- 3) The relationship between school measures and laboratory performance again could be examined.

Method

Phase 1

Subjects

Subjects were 100 fifth and sixth graders from six regular classes in three local public schools. There were 48 boys and 52 girls. The mean age of the sample was 10.5 years, with a range from 10 to 13 years.

All parents of these children had signed a letter of consent (see Appendix A) allowing their children to participate in the study. In total, 212 consent letters were sent out and 169 of these (80%) were returned. Of those returned, 147 (87%) gave consent to participate in the study and the remaining 22 (13%) withheld such consent. Forty-seven children were used for pilot testing of materials and procedures, and the remaining 100 subjects participated in the study.

The consent form also contained a separate question concerning consent to obtain information on the children from school records. Of the 100 children participating in the study, this additional consent was obtained for 88.

Measures

The children provided self-report information on four personality measures. The experimenter obtained school grade information from school records, and the teachers made ratings of behaviour observed in the classroom.

Personality measures.

1) Test Anxiety Scale for Children (TASC): The TASC (Sarason, Davidson, Lighthall, Waite, & Ruebush, 1960) is a group-administered paper and pencil test consisting of 30 items to which the child responds "yes" or "no" by circling the appropriate response on an answer sheet (see Appendix B). Items on the TASC deal with worry about tests and school performance, both while at and away from school. The test anxiety score is the number of "yes" responses. The TASC has been demonstrated to have acceptable reliability (e.g., Sarason, Davidson, Lighthall, & Waite (1958) report internal consistency estimates of .82 - .90, and test - retest reliabilities of

.65 - .82) and validity (Hill, 1972; Ruebush, 1963) and is the most widely used scale to assess children's test anxiety (Hill & Wigfield, 1984).

2) Children's Depression Inventory (CDI): The CDI (Kovacs & Beck, 1977) is a 27-item paper and pencil questionnaire that provides a symptom-oriented global measure of depression (see Appendix C). (For the present investigation, an item dealing with suicidal ideation was omitted). The format of the CDI is based on that of the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), with the child checking, for each item, which one of a set of three statements best describes his or her feelings in the past two weeks. The item choices are keyed from 0 to 2 in the direction of increasing symptom severity, thereby yielding a potential score range, for the present investigation, of from 0 to 52. Items on the CDI deal with mood, self-evaluation, physiological symptoms, and interpersonal relations. Kovacs (1980/1981, 1983) reports that the CDI has acceptable internal consistency (.71 - .87) and test-retest reliability, (.43 - .82) and reports evidence of concurrent and construct validity. It shows discriminant validity in that it differentiates major depressive from nondepressive psychiatric conditions, although its diagnostic validity for differentiating less severe forms of depression from other psychiatric conditions is not as high.

3) Intellectual Achievement Responsibility (IAR) Scale: The IAR (Crandall, Katkovsky & Crandall, 1965), is a 34-item locus of control questionnaire with a choice of attribution format (see Appendix D). The stem of each item describes a positive (success) or negative (failure) achievement experience typical of those incurred by children

in school, followed by two alternatives, one attributing causality to the behavior of the child (internally) and the other attributing causality to the behavior of another person in the child's environment (externally). A child's responsibility for failure (IAR-) is determined by summing all of the negative events for which blame is accepted whereas responsibility for success (IAR+) is determined by summing all of the positive items for which credit is accepted. A further scoring distinction that has been employed differentiated between ability and effort as two separate categories of internal attributions. It is the effort subscale of the IAR- score which Dweck has used to differentiate between her helpless and mastery-oriented groups (e.g., Diener & Dweck, 1978, 1980). Crandall et al. (1965) report adequate internal consistency, (.54 - .60) and test-retest (.47 - .74) reliability estimates for the IAR.

4) Piers-Harris Children's Self-Concept Scale: The Piers-Harris (Piers & Harris, 1964) consists of 80 items assessing children's positive and negative self-evaluations across a broad range of behaviors. For each item, the child circles "yes" or "no". Items are scored in the direction of high (i.e., adequate) self concept. Piers (1969) reports adequate internal consistency (.78 - .93) and test-retest (.71 - .77) reliability. Evidence of construct validity is also presented. Ames and Felker (1976) and Ames (1979) have used an abbreviated version of 20 randomly selected items from the Piers-Harris, citing research (Garrison, 1976) indicating that such a reduced form of the scale does not significantly alter the trait assessed by the complete scale. To reduce the amount of time required for personality testing, a shortened version of the Piers-Harris was also

used in the present investigation (see Appendix E).

School measures.

1) School Grades: The average grade over the subjects of English, math, science, and social studies, based upon marks obtained on the last report card received prior to participation in the study, was calculated from school records for those 88 children for whom parental consent to examine school records was received.

2) Teacher Ratings: For each of the 100 students participating in the study, the child's classroom teacher made a rating to indicate the degree to which he or she believed that descriptions of behaviors characteristic of test anxiety and learned helplessness (i.e., giving up easily in a difficult situation) were typical of behavior that was commonly observed within the classroom (see Appendix F).

Procedure

The children were tested in a group session within their classrooms. The female examiner (either the author or a female research assistant) introduced herself and indicated that she was interested in finding out about children and how they feel and think about many things (see Appendix G for verbatim instructions). The non-evaluative, voluntary and confidential nature of the questions was emphasized. Questions were read aloud, and the children followed along in booklets of their own, marking the appropriate responses. The session took approximately 45 minutes.

School grades were obtained by the author from report cards in each child's school file. The teacher rating forms were presented to the teachers at the completion of the study, and the completed forms were mailed back to the author.

Phase 2

Subjects

The same 100 boys and girls who participated in the first phase of the study were also subjects in this second phase.

Materials

The materials for this second phase of the study included mazes taken from the Porteus Maze Test and the WISC-R Mazes subtest (see Appendix H). The mazes were printed on yellow or blue paper (to be discussed below). Thirteen of the mazes were solvable and had been found, during pilot testing, to be of an appropriate difficulty level for the children of this study. Five additional mazes had been modified by the addition of lines, in order to make them unsolvable. The unsolvable and solvable mazes were designed to be indistinguishable in appearance.

Rating forms were also utilized in this second phase in order to obtain performance rating, causal attribution, cognitive interference, and performance recall information.

Procedure

Approximately one to two months following the first session, the children were seen individually in a room in their schools to participate in the maze session. The experimenter conducting this session (either the author or a female research assistant) had no knowledge of the children's scores on the personality measures gathered in Phase 1.

The session was introduced by explaining that its purpose was to find out how boys and girls of the child's age do on maze puzzles, and some of the things they think about while trying maze puzzles.

(see Appendix I for verbatim instructions). The voluntary nature of participation in the session was discussed. Following an explanation of how to solve the mazes, explaining that blind alleys should be avoided, lines should not be crossed, and the pencil could not be lifted off the paper until out of the exit, a single maze, of low difficulty, was presented in order to ensure that the children did know how to solve maze puzzles.

The use of a 7-point rating scale was then explained and the children completed an initial performance expectancy rating (see Appendix J, page i).

Three solvable mazes were then presented as practice problems, which would enable the child to get "warmed up" in solving maze puzzles. It was emphasized that the practice mazes did not count, and it was explained that although they were being timed, the time taken to solve the mazes was solely for the child's own information.

Following the practice mazes, the children were told that the maze test would begin. The evaluative nature of the test, as well as the possibility of failure, was stressed. It was explained that the same test would be administered to approximately 100 boys and girls and that the child's score would be compared to the scores of the other children. Scoring was explained as follows: Any maze could be passed or failed. A passed maze was completed in 60 seconds or less; a failed maze was not completed within that time limit. For a passed maze, time taken to complete the maze was recorded on the child's score card. In addition, for a very fast passed maze (30 seconds or less) a black circle was placed around the score to emphasize how fast it was. For a failed maze, a large red "X" was placed on the

child's score card. At the end of the test all scores would be added up and compared to the scores of other children.

Three solvable mazes were then presented as part of the test, and then more ratings were completed (see Appendix J, page ii). These ratings included mood, enjoyment of the task, evaluation of own performance and expected performance of others, expected future performance, self-reward, and self-punishment. For self-reward, the children were asked to circle the number of stars (from 0 to 10) that they thought they deserved as a reward for their performance so far. For self-punishment, the children were asked to circle the number of "unhappy faces" (from 0 to 10) that they thought they deserved as a punishment for their performance so far.

To this point, all of the mazes had been printed on only one colour of paper, either blue or yellow. The remaining mazes were printed on paper of the other colour, and the children were told that they came from a different maze puzzle book. The colour change was utilized to emphasize to the children that this set of mazes was different from the preceding set. By keeping the colour of the postfailure mazes the same as that of the failure mazes, it was expected that generalization from failure to postfailure trials would be facilitated. Four unsolvable mazes were then presented (the children, therefore, received four red "X"'s on their score cards), and another set of performance ratings were made--mood, enjoyment of the task, evaluation of own performance thus far, expected performance of others thus far, expected future performance, self-reward, and self-punishment (see Appendix J, page ii). In addition, causal attribution 7-point ratings for the specific causes of task difficulty,

ability, effort, luck, lack of motivation, and agent of evaluation and the dimensions of internality, stability, globality, and controllability were completed. Two separate assessments of internality were used. One focused on failure as being one's own fault, whereas the second had a comparative focus, emphasizing poor performance relative to that of other children. Both of these were considered to represent an internal attribution (see Appendix J, page iii and iv).

One unsolvable maze and six solvable mazes were then presented. (The unsolvable maze was included following the completion of the ratings in order to re-emphasize their failures to the children prior to their attempting the postfailure mazes.) The first three solvable mazes had been found, during pilot testing, to be of comparable difficulty to the first three solvable mazes of the "test". The final three solvable mazes had been found, during piloting, to be of a low level of difficulty, and were used to provide all of the children with a final experience of success.

A last page of ratings of enjoyment, evaluation of own performance, expected performance of others, expected future performance on blue mazes and on yellow mazes, self-reward, and self-punishment was completed (see Appendix J, page v). It was emphasized that this set of ratings referred to the entire set of mazes attempted during the session. A modified version of Sarason and Stoop's (1978) Cognitive Interference Questionnaire (CIQ), which asked about cognitions while working on the mazes was then filled out (see Appendix J, page vi). (Galassi, Frierson, and Sharer (1981a) have shown that concurrent and retrospective assessments of cognitions related to test anxiety yield equivalent data). Finally, the

children rated satisfaction with performance and made a final rating of mood (see Appendix J, page vii). (The precise ways in which the measures collected during this maze session were utilized to derive the dependent variables of interest in this study will be described fully in the Results section of the paper.)

At the conclusion of the session, all children were assured that they had done average or better than average. It was explained that some of the mazes were simply too difficult to complete in 60 seconds. They were also asked not to discuss the test with any other students who had not yet had a turn.

Phase 3

Subjects

Due to illness, absenteeism or moving out of the school neighbourhood, eight of the original 100 children were unavailable to participate in the final phase of the study. The remaining 92 children included 49 girls and 43 boys.

Stimuli and Apparatus

The visual stimuli consisted of a series of slides of playing cards. The playing cards used as stimuli were clubs and spades ranging in value from 2 through 10, inclusive. A set of 80 slides (used to comprise one trial) were arranged to include ten target pairs of identical stimuli ("hot" sequence) and ten pairs of stimuli identical in number but differing in suit ("cold" sequence). This latter set of pairs was found during pilot testing to comprise the largest source of response commission errors. There were two different sets (i.e., orders) of 80 slides (see Appendix K) in order to make it more

difficult for the children to remember the order of the slides from trial to trial. Each was used four times to comprise the eight trials of the session.

The slides were presented by means of a Kodak 850H carousel projector onto a 23 cm by 23 cm Sawyer's Mirascreen rear projection screen. The projector was run with the selector switch on "low" (300-W illumination) and with the automatic timer on "manual". The projector was used in conjunction with a programming and time measurement system. The projector was programmed via its remote control forward feature and delay between the onset of a slide and the start of the "change slide" phase (i.e., dark phase) was determined by a Lafayette Model 41010 shutter attached to the lens of the projector. The shutter was used at the .25 setting, which provided an exposure time of approximately 300 msec. The time between the onsets of successive slides was fixed, as determined by the properties of the projector, at 1.45 seconds. The change slide phase was, therefore, 1.15 seconds.

Time measurement involved measuring the delay between the onset of a slide and the subject's response, by means of two alternatively operating electronic clocks, used in association with a counter counting slide number. Alternate clocks were required so that the experimenter could read the result of the previous trial on one clock, while the second clock was acquiring information from the ongoing trial.

Illumination of a photodiode, attached to the projector lens, by the onset of a slide produced the following effects: 1) advance the trial counter by one unit, 2) reset and start clock A (or B), 3) stop

clock B (or A) if it was still running. A response by the subject (a press on a hand-held microswitch push-button) had the effect of stopping whichever clock was running, and producing an audible click, to alert the experimenter to note and record the slide number and response latency. Response latency was measured in milliseconds. A latency of less than 200 milliseconds was considered to represent a response to the previous rather than the current slide. Thus elapsed times of 00 to 200 msec were changed to response latencies by adding one entire period, or 1.45 seconds.

During the test phase of the CPT session, evaluative feedback was given by means of two Mallory Sonalert audible signals (Models SC628H and SC688AE) with frequencies of 4500 Hz (maximum 80 db at 2 feet) and 1900 Hz (maximum 65 db at 2 feet) respectively, attached to a Lafayette 5805 24V power supply.

Procedure

At an interval of approximately one to two months following the maze session, the children were again seen individually in a room in their schools and participated in the Continuous Performance Test (CPT) session. The author was the CPT examiner for all of the children.

The version of the CPT used in the present study is a modification, by Rutschmann et al. (1977) of the children's version of the Continuous Performance Test of Brain Damage (Rosvold, Mirsky, & Sarason, 1956). It is a test of sustained attention, involving automatic presentation of a sequence of visual stimuli in the form of playing cards, with instructions to the subject to respond whenever identical stimuli follow each other, and not to respond when

successive stimuli are nonidentical. Rate and sequence of presentation of stimuli are independent of subject's responding. The CPT allows for the examination of number of errors made, types of errors (omission or commission) and average response latency.

The CPT was introduced to the children as a task designed to show how well children pay close attention (see Appendix L for verbatim instructions). The voluntary nature of participation in the session was again discussed. Operation of the equipment and the CPT task were then explained to the children, and forty slides, containing five "hot" and five "cold" sequences were then presented to ensure that the children understood the task.

Two trials (both using the same order of slides, either Sequence 1 or 2) were then introduced as practice trials that didn't count, although responses and response latencies were recorded.

After these two practice trials, the "test", consisting of 6 more trials (beginning with the other Sequence of slides and alternating every two trials), was then described. The children were told that the test was the same as the practice, except that they would be receiving scores for their performance, which would be compared to the scores of other children taking part in the study. Calculation of the scores was described as follows: Four times during the trial (i.e., set of 80 slides) the experimenter would determine whether the child was doing well (i.e., pressing the button quickly and appropriately) or doing poorly (i.e., pressing slowly and inappropriately). If the child was doing well, one buzzer (1900 Hz) was sounded and a checkmark was placed on the child's score card. If the child was doing poorly, the other, unpleasant sounding buzzer (4500 Hz) was sounded and an

"X" was placed on the child's scorecard. For each trial, a score of A was received for four checkmarks, a B for three checkmarks and one "X", and C for two checkmarks and two "X"'s, a D for three "X"'s and one checkmark, and an F for four "X"'s (see Appendix M).

The children received negative feedback for the first four trials of the test, receiving scores of D, F, D and C. In order to assess the effectiveness of the failure manipulation the children made a rating of perceived performance following the four failure trials.

Two final trials followed, on which the children received scores of B and A, respectively. Following these last trials, the children were told that because the test was hard, only their best three out of the six test trials would count, and were assured that they had done very well. A final reminder to not discuss the test with anyone who had not had their turn yet was then given.

Results1

This study involved the examination of the relationships, and interrelationships, among a large number of variables, and therefore required conducting a large number of individual analyses. In recognition of the lack of independence among many of these analyses, and the increased risk of committing a Type I error, the more conservative .01 alpha level was adopted. (The use of a more conservative Bonferroni test to deal with the lack of independence among analyses was decided against because of the exploratory nature of the study and the desire to detect all possible relationships that might exist. In addition, it was not clear, at this point, which variables did cluster, so that there was little a priori information to

use in selecting the "family" of variables for setting a familywise error rate.) Marginal relationships, with a probability level falling between .05 and .01, were considered relevant only in those instances in which they appeared to support some larger pattern of interrelationships found among the variables.

Presentation of results will follow the same format as the presentation of the issues within the introduction.

Interrelationships Among Variables

Personality Measures

Table 1 presents the means, standard deviations and range of scores for each of the personality measures administered. As suggested by Nicholls (1976) and Dusek (1980), the TASC was broken down into four subscales representing i) anxiety concerning tests (TASC-anxiety), ii) somatic complaints (TASC-somatic), iii) comparative poor self-evaluation (TASC-self-evaluation), and iv) remote school concerns (TASC-remote), (see Appendix B), and scores for each of these subscales, as well as a total TASC score, were computed. The TASC subscales were derived by using Feld and Lewis' (1969) factor analysis results. In addition, the IAR scale was used to derive four scores. The standard internal responsibility for success (IAR+) and internal responsibility for failure (IAR-) scores were computed, as well as scores representing ability attributions (IAR-(ability)) and effort attributions (IAR-(effort)) for failure. This latter score is the one used by Dweck and her colleagues (Diener & Dweck, 1978, 1980; Licht & Dweck, 1984) to classify helpless and mastery-oriented children.

TABLE 1

Mean, Standard Deviation and Range
of Scores for Personality Variables

	<u>Mean</u>	<u>S.D.</u>	<u>Minimum</u>	<u>Range</u> <u>Maximum</u>
TASC	13.13	6.26	1	27
TASC-anxiety	6.57	3.29	1	13
TASC-somatic	2.90	1.68	0	6
TASC-self evaluation	1.95	1.45	0	5
TASC-remote	1.72	1.43	0	5
CDI	7.27	5.50	0	28
IAR+	12.98	2.47	7	17
IAR-	9.87	2.50	4	15
IAR-(effort)	5.82	1.93	1	9
IAR-(ability)	4.05	1.41	0	7
Pier's-Harris	14.44	3.33	3	20

N = 100

Note: See text for explanation of abbreviations of scale labels.

To examine the relationships among this set of personality variables, intercorrelations were calculated and are presented in Table 2. (In order to enhance clarity of presentation of the results, only those correlations which were significant at a probability level less than .05 are presented within the tables of this paper. The full set of correlations are available from the author.) Strong intercorrelations exist within the set, with most of the correlations reaching significance at an alpha level exceeding .001. In fact, only the score assessing internal responsibility for failure on the IAR (IAR-), and its component effort and ability scores, failed to correlate with the other measures.

To further examine the degree of association among groups of children who would be classified as high and low test anxious, internal and external locus of control, high and low self-concept or depressed and nondepressed in various studies, a tertiary split procedure was used to assign subjects to high, medium and low groups on each of the measures found to show significant relationships in the correlational analysis presented in Table 2 (i.e., TASC, CDI, IAR+, Piers-Harris). Tertiary splits are commonly used for group classification in the relevant child development literature (e.g., Hill & Eaton, 1977; Nottelman & Hill, 1977; Wine, 1979). Chi-square analyses indicated a significant degree of overlap among most of the measures. There was a marginally significant association between test anxiety and self-concept ($\chi^2(4) = 8.16, p < .09$), but all of the remaining associations were highly significant (TASC and CDI: $\chi^2(4) = 19.39, p < .0007$; TASC and IAR+: $\chi^2(4) = 16.86, p < .002$; CDI and IAR+: $\chi^2(4) = 16.48, p < .002$; CDI and Piers-Harris: $\chi^2(4) = 31.09, p < .0001$; IAR+ and

TABLE 2

Intercorrelations among the Set
of Personality Variables

	1	2	3	4	5	6	7	8	9	10	11
1. TASC		.92	.74	.63	.74	.43	-.43	-	-	-	-.31
2. -anxiety			.59	.46	.59	.40	-.43	-	-	-	-.25
3. -somatic				.27	.43	.31	-.26	-	-	-	-
4. -self evaluation					.39	.29	-.39	-	.3	-	-.41
5. -remote						.32	-.21	-	-	-	-.22
6. CDI							-.42	-	-	-	-.61
7. IAR+								.23	.31	-	.52
8. IAR-									.83	.64	-
9. IAR-(effort)											.22
10. IAR-(ability)											-.24
11. Piers-Harris											

Note: N = 100.
 $r > .30$ at $p < .001$
 $r > .23$ at $p < .01$
 $r > .16$ at $p < .05$

See text for explanation of abbreviations of scale labels.
 Only values with $p < .05$ are included within the table.
 Decimal points are omitted.

Piers-Harris: $\chi^2(4) = 26.81, p < .0001$. To illustrate with a specific example, 53 percent of the low depressed group were also low test anxious, whereas 40 percent of the high depressed group were also high test anxious.

Summary

These results, then, suggest a significant degree of overlap among the characteristics measured by the set of personality measures used in the present study. The chi-square analyses show that the phenomena of test anxiety, depression, level of self-concept, and locus of control for achievement successes are not independent. It appears that classification into groups using a tertiary split on any of these measures will often produce groups that differ significantly on other of the measures as well.

Characteristics of Maladaptive Responding

The measures collected during testing on the mazes provided indices, many of them repeated, of each of the characteristics proposed by Dweck and Wortman (1982) as being relevant to a differentiation of maladaptive from adaptive responding. In the following paragraphs, the ways in which these measures were used to represent these characteristics first will be described. Results involving the characteristics will then be presented.

Indices of the Characteristics

i) Performance and performance change following failure.

Performance on the mazes was evaluated by recording the number of seconds taken to complete each maze. Measures were therefore available for practice, prefailure, postfailure, and end of session

(final) performance, as well as for performance across the total session. In addition, calculation of blind alley entrances (defined as the clear crossing of an imaginary line across the mouth of a blind alley) and drawing errors (defined as cutting corners or cutting through an alley wall) provided additional information about maze performance.

One characteristic associated with maladaptive responding is a deterioration in performance following a failure. It is necessary, therefore, to have a means of comparing prefailure and postfailure performance. Although a simple prefailure-postfailure difference score is one way to achieve such a comparison, several authors have expressed concerns about the value of pretest-posttest difference scores (i.e., pretest subtracted from posttest) because of certain problems associated with them (see Cohen & Cohen, 1975; Cronbach & Furby, 1970; Linn & Sliade, 1977; Zimmerman & Williams, 1982a, 1982b, 1982c, 1982d).

First, the reliability of a difference score is often much lower than the reliability of either of the variables being differenced. This low reliability may attenuate any relationship with other variables of interest, making it difficult to examine correlates of change. Second, the simple difference score typically has a negative correlation with the pretest score. This occurs because of a statistical artifact resulting from the fact that an error component appears with opposite signs in the pretest and the difference score. The implication of this negative correlation is that large, positive difference scores are more likely to be observed for persons scoring low on the pretest, suggesting that these persons have increased their scores most.

Third, and related to the second point, because the difference score is correlated with the pretest performance, as a measure of change it will contain some unwanted variance wholly due to the prescore. The relationship of change to other variables is therefore distorted, being either reduced or enhanced by its relationship to that portion of the pretest which the change score contains.

In order to avoid these difficulties, various solutions have been offered. One such solution is the use of the residual gain score (Cronbach & Furby, 1970; Linn & Slinde, 1972; Manning & Dubois, 1962). The residual gain represents the deviation of the obtained posttest scores from the regression line of posttest on pretest scores. In other words, residual gains represent the difference between actual posttest performance and the posttest performance that would be predicted on the basis of the pretest score. Residual gains are uncorrelated with pretest scores, and, in general (see Linn & Slinde, 1977; Manning & Dubois, 1962), tend to be more reliable than the simple difference score. In the present study, then, residual gain based upon the regression of postfailure onto prefailure scores was used as an index of performance change following failure. In addition, residual gain based upon the regression of prefailure onto practice scores (to assess change from a non-evaluative to an evaluative situation) and upon the regression of end of session onto prefailure scores (to assess enduring effects) were also calculated:

ii) Enjoyment of test situation.

A second proposed characteristic of maladaptive responding is an affective one, involving negative attitude toward the testing situation. The ratings of mood and liking of the maze task were both considered

to be relevant to this characteristic. Mood and liking were significantly correlated (e.g., $r(99) = .64$, $p < .001$, during the postfailure period) and were summed to provide a composite measure of attitude toward testing.

iii) Concentration on the task at hand.

A third proposed characteristic of maladaptive responding is difficulty in concentrating on the task at hand. The Cognitive Interference Questionnaire (CIQ) was utilized as the measure of off-task focusing. Ratings for each of the ten statements were summed to provide an overall measure of cognitive interference.

iv) Interpretation of evaluative feedback.

A fourth proposed characteristic of maladaptive responding is a negative interpretation of evaluative feedback. One component of this characteristic is perceived adequacy of performance. The obtained ratings of evaluation of own performance, self-reinforcement, and self-punishment for performance were considered relevant to this component. These three measures were significantly intercorrelated (e.g., evaluation and self-reinforcement: $r(99) = .60$, $p < .001$; evaluation and self-punishment: $r(99) = -.43$, $p < .001$; and self-reinforcement and self-punishment: $r(99) = -.47$, $p < .001$, in the postfailure period) and were summed to provide a composite index of adequacy of performance. Similarly, the end of session rating of satisfaction with performance was considered an overall rating of perceived adequacy of performance.

A second aspect of this characteristic involves comparison of one's own performance to that of relevant others. This was assessed by subtracting the rating of estimated performance of others from the

rating of evaluation of own performance. (It should be noted in light of the previous discussion that this is not a measure of change, but rather an index of perceived relative performance).

v) Self blame.

Viewing of failure as resulting from one's own lack of competence is a fifth proposed characteristic of maladaptive responding. It was considered to be best assessed by endorsement of the ability attribution for failure ("Do you think [the trouble you had on the mazes] was because you aren't good at doing mazes?").

vi) Future expectancies.

The final proposed characteristic of maladaptive responding is a negative expectancy concerning future performance. The children did make repeated ratings of how well they expected to do if they were given more maze puzzles to solve. The two expectancy ratings from the end of session period (i.e., expectancy of future performance on more success mazes, and on more failure mazes) were significantly correlated ($r(99) = .61, p < .001$) and were averaged to provide a single index.

Table 3 presents the means, standard deviations and range of scores for each of these indices of the characteristics of maladaptive responding across the session.

Manipulation Check

The completion of several of the performance ratings at three time periods throughout the session -- prior to any failure, immediately following the failure, and at the end of the session -- provided an opportunity to evaluate the influence of the failure manipulation upon the performance ratings of the children, as well as

TABLE 3
Mean, Standard Deviation and Range
of Scores for Characteristics of
Maladaptive Responding

	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	
			<u>Minimum</u>	<u>Maximum</u>
Initial Expectancy	5.15	1.13	2	7
<u>Prefailure</u>				
Task Enjoyment	11.38	1.64	6	14
Evaluation of Performance	8.26	3.44	- 2	17
Comparative Evaluation	- .44	1.01	- 3	2
Future Expectancy	5.38	.91	3	7
<u>Postfailure</u>				
Task Enjoyment	9.11	2.39	3	13
Evaluation of Performance	3.96	4.48	- 9	14
Comparative Evaluation	-1.37	1.39	- 5	4
Future Expectancy	4.09	1.31	1	7
Ability Attribution	3.69	1.72	1	7
Residual Gain Score	0	37.63	-52.74	123.43
<u>End of Session</u>				
Task Enjoyment	11.62	1.82	7	14
Evaluation of Performance	9.46	3.40	1	17
Comparative Evaluation	- .06	.72	- 2	2
Future Expectancy	5.64	.89	3	7
CIQ	23.28	5.45	12	35
Satisfaction	5.23	1.22	2	7

N = 100

Note: See text for description of the characteristics of maladaptive responding.

to examine recovery effects associated with the final experiences of success. A series of correlated t-tests (means and standard deviations are included in Table 3) indicated highly significant differences for all of these ratings between the prefailure and postfailure periods (t -values (99 d.f.) of 12.92, 12.36, 7.09, 12.67 for task enjoyment, evaluation of performance, comparative evaluation, and future expectancy, respectively, all p 's < .0001), and between the postfailure and end of session periods (t -values (99 d.f.) of -14.07, -16.01, -10.66, -12.62 for task enjoyment, evaluation of performance, comparative evaluation, and future expectancy, respectively, all p 's < .0001), confirming the effectiveness of both the failure manipulation, and the subsequent success experiences. A highly significant difference between the two end of session expectancy ratings (i.e. future expectancies for performance on additional blue and yellow mazes) ($t(99) = -11.04, p < .0001$) also provides evidence of the effectiveness of the failure manipulation.

Intercorrelations Among Characteristics of Maladaptive Responding

Utilizing the entire set of characteristics, as well as the prefailure and final residual gain scores, intercorrelations were calculated in order to provide empirical evidence on maladaptive responding as a construct. Table 4 presents this set of intercorrelations. Correlations with the actual performance scores are also included.

Because Dweck and Wortman's (1982) emphasis was upon responding in difficult or challenging achievement settings, the set of postfailure variables may be considered most relevant to their theory. Looking first at this set of correlations, then, it can be seen in

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TABLE 4
Intercorrelations among the Characteristics
of Maladaptive Responding

	Prefailure					Postfailure					End of Session								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. Initial Expectancy																			
Prefailure																			
2. Task Enjoyment				40	25	58													
3. Performance Evaluation					55	58													
4. Comparative Evaluation						41	-19												
5. Future Expectancy																			
6. Prefailure Residual																			
Postfailure																			
7. Task Enjoyment																			
8. Performance Evaluation																			
9. Comparative Evaluation																			
10. Future Expectancy																			
11. Ability Attribution																			
12. Postfailure Residual																			
End of Session																			
13. Task Enjoyment																			
14. Performance Evaluation																			
15. Comparative Evaluation																			
16. Future Expectancy																			
17. CIG																			
18. Satisfaction																			
19. Final Residual																			
Prefailure Score																			
Postfailure Score																			
Final Score																			

Note: N = 109

$r > .30$ at $p < .001$

$r > .23$ at $p < .01$

$r > .16$ at $p < .05$

See text for description of the characteristics of maladaptive responding.
Only values with $p < .05$ are included within the table.
Decimal points are omitted.

Table 4 that neither residual gain nor postfailure performance shows any significant relationship to the other characteristics of maladaptive responding. All of these other characteristics, however, are significantly intercorrelated.

Table 4 also provides information about intercorrelations among ratings across the entire maze session. Generally, the same pattern of intercorrelations among variables that was evident during the postfailure period was also evident during both the prefailure and end of session periods. Furthermore, despite the significant changes in ratings across the three time periods of the session, as discussed above, there are highly significant intercorrelations among the ratings obtained at the three time periods. The ratings obtained immediately following failure, or at the end of the session, correlate significantly with ratings made at the beginning of the session, before any failure had been experienced. Similarly, the final rating of satisfaction with performance was significantly correlated with every one of the performance ratings made during each of the three time periods. Thus, a child's overall satisfaction with his or her performance during the maze session could be predicted from the ratings that were made early in the session and prior to any failure.

In light of these results, a further analysis of this data was completed. When group classification was made on the basis of a tertiary split on the initial expectancy rating, which was obtained following a single intended non-evaluative practice trial, a 2 (group) x 3 (time) repeated measures multivariate analysis of variance comparing the two extreme groups (i.e., high and low initial expectancy) on the four repeated performance ratings produced a

significant main effect for group ($F(4,66) = 3.39, p < .01$). Univariate tests showed significant group differences for each of task enjoyment ($F(1,69) = 9.07, p < .003$), evaluation of performance ($F(1,69) = 10.71, p < .001$), comparative evaluation ($F(1,69) = 3.98, p < .05$) and future expectancy ($F(1,69) = 11.36, p < .001$). A highly significant main effect of time confirmed the strong effects of the failure and success manipulations upon the ratings. A significant group by time interaction ($F(8,272) = 2.07, p < .04$) was accounted for by the task enjoyment variable ($F(2,138) = 6.39, p < .002$), with a greater decrease in task enjoyment following failure for the low initial expectancy group (means of 10.93, 7.86, 11.18 prefailure, postfailure and end of session, respectively); than the high expectancy group (means of 11.72, 9.95 and 12.12 prefailure, postfailure and end of session, respectively). There was not, then, a particularly negative effect of failure upon performance evaluation (own or comparative) or future expectancy in that same low initial expectancy group. A further multivariate analysis of variance found significant group differences, utilizing these same groupings, for the ability attribution, CIQ rating and measure of satisfaction ($F(3,67) = 6.79, p < .0004$). The univariate tests showed significant effects for each of ability ($F(1,69) = 14.10, p < .0004$), CIQ ($F(1,69) = 7.64, p < .007$) and satisfaction ($F(1,69) = 9.56, p < .003$). Thus, differences across the session could be predicted on the basis of a single, early rating.

Table 4 also provided evidence on the relationship between actual performance on the mazes and the children's ratings of performance. No significant correlations were found, indicating that the children's ratings of their enjoyment, evaluation or expectancies

concerning the maze session were unrelated to their actual performance.

A principal components factor analysis with varimax rotation was also utilized to further investigate maladaptive responding as a construct. With all of the characteristics of maladaptive responding entered into the factor analysis, two factors with eigenvalues greater than one were produced. These factors together accounted for 92.6 percent of the variance in these measures (79.7 percent and 12.4 percent). This analysis is presented in Table 5. The task enjoyment ratings, future expectancy ratings (excluding initial expectancy), and rating of satisfaction load most strongly on the first factor, whereas performance evaluation, comparative evaluation, CIQ, and ability attribution load most strongly on the second factor. Postfailure residual gain score loads on neither. There appear, then, to be two separate components to "maladaptive responding" in achievement situations. The first and largest component appears to be an affective one, representing one's negative feelings about being in the setting and about one's performance. Negative future expectancies are most strongly related to the affective component. The second, smaller component is an evaluative one, representing negative evaluation of performance, concern about how one is performing, and self-blame for failure.

Performance Change

In order to provide additional information about the changes in maze performance that were associated with failure, an examination of blind alley entrances and drawing errors was made. A tertiary split on postfailure residual gain scores was used to obtain two extreme

TABLE 5

Rotated Factor Matrix for Principle Components Factor
Analysis on Characteristics of Maladaptive Responding

Measure	Factor 1	Factor 2
Initial Expectancy	.1811	.1863
<u>Prefailure</u>		
Task Enjoyment	.7979	.0996
Performance Evaluation	.3560	.6479
Comparative Evaluation	.1663	.6256
Future Expectancy	.5271	.3810
<u>Postfailure</u>		
Task Enjoyment	.6099	.2660
Performance Evaluation	.2986	.7660
Comparative Evaluation	.1137	.6493
Future Expectancy	.4810	.3726
Ability Attribution	-.2143	-.3000
Postfailure Residual	.0012	.1811
<u>End of Session</u>		
Task Enjoyment	.8535	.2280
Performance Evaluation	.5864	.6214
Comparative Evaluation	.2292	.6024
Future Expectancy	.5356	.1858
CIQ	-.1904	-.4103
Satisfaction	.5724	.4994

Note: See text for description of the characteristics of maladaptive responding.

groups (i.e., most apparent disruption in performance following failure and least apparent disruption in performance). A 2 (group) by 2 (time) repeated measures multivariate analysis of variance was used to examine blind alley entrances and drawing errors in the prefailure and postfailure periods. It revealed no significant main effect of group. There was a significant main effect for time ($F(2,62) = 3.59, p < .03$) as well as a significant group by time interaction ($F(2,62) = 19.48, p < .0001$). Univariate tests of the interaction revealed significant effects for both blind alley entrances ($F(1,63) = 39.15, p < .0001$) and drawing errors ($F(1,63) = 14.10, p < .0004$). Examination of the means showed that prior to the failure, the group whose performance appeared to deteriorate most tended to enter fewer blind alleys than the other group (means of 6.18 versus 7.91). Postfailure, however, the pattern changed and the deteriorated group was entering more blind alleys (means of 9.03 versus 5.22). Similarly, when drawing errors are examined, no differences were found between the two groups prior to failure (means of 5.52 versus 5.81) whereas, postfailure, the "deteriorated" group was making more drawing errors (means of 8.48 versus 5.16). Thus, the increase in time taken to solve the mazes does not appear to be a result of an adaptive response, such as slowing down in order to be more careful, but rather related to an increase in drawing errors and blind alley entrances, indicating instead a lack of care in solving the mazes.

Also, with respect to maze performance, group differences across the entire maze session can also be studied. Although using a tertiary split on the residual gain score as the basis for group classification ensures that the groups do not differ in their prefailure

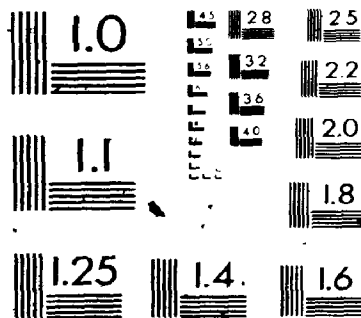
performance, the practice trials can also provide information about maze performance before any failure was experienced. Utilizing a total practice score (summed across the three practice trials), it was found that the "disrupted" group were showing poorer (i.e., slower) maze performance even during the practice trials ($t(53) = -3.53$, $p < .001$). Thus, although the one group of children (disrupted performance) were performing more poorly on the mazes in the initial practice sessions, their performance was even worse than expected following the failure. Performance on the postfailure and final success trials also differed significantly between groups ($t(52) = -10.64$, $p < .0001$, and $t(47) = -3.97$, $p < .0001$, respectively), with the group whose performance became disrupted taking longer to complete the mazes during these time periods as well.

Summary

The data of this study provide some support for Dweck and Wortman's (1982) construct of maladaptive responding, in that individual differences do exist in postfailure ratings of enjoyment of a test situation involving failure, evaluation of performance in such a situation, future expectancies, cognitive interference, and self-blame and these variables do intercorrelate significantly. Thus, individual children show a consistent pattern of more or less negative ratings across each of these variables. A factor analysis indicated that there were two components to the construct -- a large affective one reflecting feelings about being tested and a smaller component reflecting negative evaluations of performance and concerns about such evaluation. Contrary to what would be expected on the basis of Dweck and Wortman's theorizing, however, performance change

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MICROCOPY RESOLUTION TEST CHART
NBS 1010a
(ANSI and ISO TEST CHART No. 2)



following failure was unrelated to any of these other measures.

In further examining these individual differences in performance ratings it is apparent that the response set observed is not simply a response to the failure experienced. Although all ratings decreased following failure and increased again following success, individuals came into the session with relatively more positive or more negative ratings and maintained these relative positions across the entire session. Not only were none of these performance ratings related to the measure of performance change, but they were also unrelated to the measure of actual performance. Thus, the children's ratings of their performance were not dependent upon the ways in which they had actually performed.

When the children are classified according to amount of performance disruption from prefailure to postfailure, those children showing the greatest disruption were entering more blind alleys following the failure (though they had entered fewer prior to the failure), and were making more drawing errors (though there had been no differences prior to the failure) than those children showing the least disruption. Thus, a relative increase in time taken to solve the mazes was associated with an increase in careless errors. Also, it appears that those children showing the most performance disruption following failure had the poorest maze performance throughout the session.

Personality Measures and Maladaptive Responding

Dweck and Wortman (1982) also hypothesized that the maladaptive responder is characterized by high test anxiety, fear of

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failure, and helplessness. To examine this hypothesis, the personality measures were included in a correlational analysis with the measures of performance change and performance ratings. The results are presented in Table 6. The performance scores are also included within the table.

Only the TASC, and particularly its somatic subscale, was associated with actual performance, with test anxiety related to slower performance across the session.

Utilizing the postfailure residual gain score as an indicator of performance change following failure, a significant negative correlation was found with the IAR+ scale, indicating that those children who are less likely to take internal responsibility for achievement successes, as measured by the IAR, performed more poorly on the mazes following the failure than would be predicted on the basis of their prefailure performance. The CDI and the Piers-Harris also produced marginally significant correlations with the postfailure residual.

Looking at the prefailure residual, a significant correlation exists with the TASC self-evaluation subscale and a marginal correlation exists with the CDI. These relationships are in the opposite direction to theoretical predictions (i.e. performance improved as the situation became evaluative) and are, therefore, not readily interpretable. The marginal correlations between the final residual and the TASC, and its subscales, and the IAR-(effort) scale are in the expected direction, with end of session performance marginally poorer than predicted for those who report greater test anxiety and

TABLE 8
Correlations between the Personality Measures
and the Characteristics of Maladaptive Responding

	TASC	anxiety	somatic	TASC	self eval.	remote	(10)	IAR	IAR	effort	ability	Piers-Harris
1. Initial Expectancy												
2. Prefailure												
3. Task Enjoyment	-24	-19	-18									
4. Performance Evaluation	-19	-17	-18									
5. Comparative Evaluation	-18											
6. Future Expectancy	-16											
7. Prefailure Residual												
8. Postfailure												
9. Task Enjoyment	-31	-28	-21									
10. Performance Evaluation												
11. Comparative Evaluation												
12. Future Expectancy												
13. Ability Attribution												
14. Postfailure Residual												
15. End of Session												
16. Task Enjoyment	-32	-16	-28									
17. Performance Evaluation	-22	-18	-24									
18. Comparative Evaluation	-27	-25	-32									
19. Future Expectancy	-18	-33	-25									
20. Satisfaction	35	33	25									
21. Final Residual	18	16	21									
22. Prefailure Score	23	20	28									
23. Postfailure Score	18	17	20									
24. Final Score	17	17	25									

Notes: N = 100

r(1,38) at p < .001

r(1,38) at p < .01

r(1,38) at p < .05

See text for explanation of abbreviations and labels.
Only values with p < .05 are included within the table.
Decimal points are omitted

marginally better for those who attribute failure to effort. These relationships, though, are very small.

Correlations between the personality measures and the performance ratings are also presented in Table 6. Prior to any failure, both higher test anxiety and depression were associated with less enjoyment of the mazes and poorer evaluation of maze performance, whereas higher self-concept was associated with greater enjoyment and more positive evaluation. Immediately following failure, test anxiety and marginally, depression and low self-concept were again associated with less task enjoyment. Evaluation of performance and future expectancy ratings during this period were unrelated to the personality measures. Low self-concept, and the self-evaluative subscale of the TASC were both correlated with self-blame for failure. The strongest relationships with the personality measures are apparent in the end of session period. Test anxiety, particularly its somatic component, and depression are associated with more negative affective, evaluative, and future expectancy ratings, as well as less overall satisfaction with performance. In addition, the end of session measure of cognitive interference during the maze session produced significant correlations with test anxiety, and marginal correlations with depression, locus of control for achievement successes, and self-concept.

Finally, if maladaptive responding is conceptualized as a response to challenge or failure, the effects of such failure also can be examined by looking at changes in ratings from prefailure to postfailure. The problems associated with the use of change measures again become relevant. Cohen and Cohen (1975), Cronbach and Furby

(1970) and Linn and Slinde (1977), however, argue that if one is interested in investigating the correlates of a pretest to posttest change, it is unnecessary to calculate a change score. Rather, a partial correlation, describing the relationship between the posttest and some other variable of interest, with the effects of variation in the pretest removed, can be utilized. Such a partial correlation will provide a means of examining the relationships among posttest variables that are independent of the pretest variables.

Partial correlations between the personality variables and postfailure ratings with prefailure ratings partialled out, produced only one significant correlation between enjoyment and the somatic subscale of the TASC ($r = -.23$, $p < .01$) and marginal correlations between enjoyment and the TASC ($r = -.20$, $p < .025$), and the IAR-subscale and evaluation ($r = -.22$, $p < .015$) and comparison ($r = -.17$, $p < .047$).

Partial correlations between the personality variables and the end of session ratings, with postfailure ratings partialled out, were also calculated in order to look at change between these two time periods. The CDI correlated significantly with evaluation ($r = -.23$, $p < .01$) and expectancy ($r = -.24$, $p < .009$), whereas the somatic subscale of the TASC correlated significantly with the expectancy ($r = -.23$, $p < .01$) and comparison ($r = -.34$, $p < .001$) ratings.

Summary

Consistent with other findings from the test anxiety literature, test anxiety was associated with poorer performance on the mazes. In examining correlations between the personality measures and performance disruption associated with evaluation or failure, only a

single significant correlation in the predicted direction occurred; with performance disruption in the immediate postfailure period being associated with an external locus of responsibility for achievement successes.

Even in the prefailure period, test anxiety, depression, and low self-concept were associated with less enjoyment of the task and negative evaluation of performance, although there weren't significant correlations between these personality measures and actual performance during this period. Immediately following the failure, these correlations with task enjoyment remained, but, possibly because all of the children realistically had to acknowledge the failure trials, the correlation with evaluation was no longer significant. It also appears that self-blame for these failures is only associated with a poor self-concept, as the ability attribution correlated significantly with both global self-concept and the self-evaluation subscale of the TASC. The most striking pattern of relationships with the personality measures appeared in the end of session period, however, after a series of intervening successes. Although only five out of a total of 17 trials were, in fact, unsolvable trials, test anxiety and depression were both significantly associated with negative performance ratings at this time, which represented perception of performance across the entire session. Thus, it appears that test anxiety and depression were associated with an inability to disattend to the failure, in order to objectively evaluate maze performance as a whole.

These findings are confirmed by the partial correlations that were calculated in order to examine changes in the ratings. In general, the personality measures showed only small relationships with

changes in performance ratings between prefailure and postfailure. Greater test anxiety was associated with a lessening of enjoyment following failure, whereas the IAR- scale was associated with poorer evaluation following failure. Looking at the end of session period, the CDI and the somatic subscale of the TASC were also associated with lower end of session ratings (with postfailure ratings controlled for), suggesting less recovery between postfailure and the end of the session.

Causal Attributions

In addition to the ability attribution mentioned above, several other attributional ratings were also obtained following the failure mazes. The standard four specific causes of ability, effort, luck, and task difficulty were rated, as well as attributions to the agent of evaluation and to a lack of motivation. The four dimensions of internality, stability, globality, and controllability were also assessed using both single cause calculations and dimensional ratings.

The following arithmetic calculations on the single cause ratings were used to derive dimension scores:

$$\begin{aligned}
 \text{internality} &= (\text{ability} + \text{effort} + \text{lack of motivation}) - (\text{task difficulty} + \text{luck} + \text{agent of evaluation}) \\
 \text{stability} &= (\text{ability} + \text{task difficulty} + \text{agent of evaluation}) - (\text{effort} + \text{luck} + \text{lack of motivation}) \\
 \text{globality} &= - (\text{task difficulty} + \text{ability} + \text{luck} + \text{lack of motivation} + \text{effort} + \text{agent of evaluation}) \\
 \text{uncontrollability} &= (\text{ability} + \text{task difficulty} + \text{agent of evaluation} + \text{luck} + \text{lack of motivation}) - \text{effort}
 \end{aligned}$$

The combinations for the internality and stability scores appeared straightforward and seem to be in concordance with previous

uses of the cause-rating method to derive dimensions (eg. Krantz & Rude, 1984). Derivation of globality and uncontrollability scores appeared less straightforward and should be viewed more tentatively. In particular, because all of the single cause attributions apparently referred to the specific maze session of this study, the derived globality score was obtained by subtracting all of the specific ratings (i.e., summing these ratings and changing the sign). This may actually represent a tendency not to endorse any attributions, rather than an indication that the students were rating the causes as global. The problematic nature of these scores should be kept in mind.

Table 7 presents the means, standard deviations, and range for ratings on each of the causal attributions, with a larger rating indicating a stronger endorsement of the attribution. Table 8 presents the set of intercorrelations among the attributional ratings. Among the subset of specific causal attributions, there are few significant correlations, with the exception that the lack of motivation attribution correlates to some degree with all of the other attributions, except ability. Among the broader dimensions, most intercorrelate to some degree and, thus, are not orthogonal. The relationship between the specific attributions, calculated dimensions, and dimensional ratings can also be examined in Table 8. One striking result is the set of significant correlations between the ability attribution and each of the internal, stability, and globality dimension ratings. Another important result is the series of correlations between causal dimensions calculated from the single causes and those obtained by rating the dimensions themselves. Some convergence between the two measurement methods is evident, in that there are at

TABLE 7

Mean, Standard Deviation and Range
of Scores for Causal Attribution Ratings

	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	
			<u>Minimum</u>	<u>Maximum</u>
<u>Single causes</u>				
Task difficulty	4.13	1.35	1	7
Ability	3.69	1.72	1	7
Effort	3.20	1.25	1	7
Luck	2.81	1.59	1	7
Lack of motivation	2.78	1.57	1	7
Agent of evaluation	2.96	1.60	1	7
<u>Dimension ratings</u>				
Internal (own fault)	4.36	1.47	1	7
Internal (worse than others)	3.29	1.23	1	6
Stability	3.81	1.15	1	7
Globality	3.32	1.32	1	7
Uncontrollability	3.18	1.43	1	7

N = 100

Note: See text for descriptions of attribution ratings.

TABLE 8

Intercorrelations among the Single Cause, Dimension
Ratings and Derived Dimensions of Attributions

	<u>Single Causes</u>						<u>Dimension Ratings</u>				
	1	2	3	4	5	6	7	8	9	10	11
<u>Single causes</u>											
1. Task difficulty	21	-	-	19	-	-	-	-	-	23	-
2. Ability			-	16	-	21	25	44	25	37	-
3. Effort				-	22	-	-	-	-	-	22
4. Luck					29	-	-	-	-	-	-
5. Lack of motivation						28	-	-	-	21	-
6. Agent of evaluation											17
<u>Dimension Ratings</u>											
7. Internal (own fault)							32	27		19	18
8. Internal (worse than others)									20	19	-
9. Stability										34	20
10. Globality											28
11. Uncontrollability											
<u>Derived Dimensions</u>											
12. Internal							16	22	-	-	-
13. Stable							-	16	17	-	-
14. Global							-	29	-	37	-
15. Uncontrollable							16	26	-	34	18

Note: N = 100

$r > .30$ at $p < .001$

$r > .23$ at $p < .01$

$r > .16$ at $p < .05$

See text for descriptions of attribution measures.
 Only values with $p < .05$ are included within the table.
 Decimal points are omitted.

least marginal correlations (and for globality, a highly significant correlation) between the two assessment methods for each of the dimensions. Clear discriminability between dimensions is not evident, in that there are also correlations (some of which are larger than the within-dimension correlations) across different dimensions.

Table 9 presents the relationship among attributions, performance change, and the performance ratings. The actual performance scores are also included. As with the performance ratings, neither actual performance nor the indices of performance change correlated significantly with the attribution ratings, with the exception of a single significant correlation between the dimensional internal rating representing comparative poor performance, and the residual representing change between the prefailure trials and the end of the session. Of the correlations between single cause attributions and the performance ratings the largest and most striking involve the ability attribution for failure, confirming its appropriateness as a part of the cluster of characteristics comprising maladaptive responding. Although these correlations are largest during the postfailure period, when both sets of ratings were made, they are generally significant across all of the time periods. For example, the initial expectancy rating, made following a single exemplar trial, was highly correlated with endorsement of the ability attribution following failure.

Attributions to a lack of motivation, or to the agent of evaluation also relate significantly to several of the performance ratings, although ability, lack of motivation, and agent of evaluation attributions themselves intercorrelate only minimally. Whereas both the ability and agent of evaluation attributions are associated with

TABLE 9
Correlations between the Attribution Measures
and the Characteristics of Maladaptive Responding

	Single Cause					Dimensions Rating					Derived Dimensions				
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Initial Expectancy	-48					-21	-17	-17	-22			-30	-23	-30	
Prefailure															
Task Enjoyment	-29	-28		-19	-40	-21	-17	-17	-22	-22		-43	-49		
Performance Evaluation	-32	-32		-21	-31	-21	-24	-23	-28	-28		-26	-27	-24	
Competitive Evaluation	-21	-21		-20	-20	-20	-27	-20	-18	-18		-21	-21	-21	
Future Expectancy	-19	-20		-19	-19	-19	-19	-21	-20	-21		-24	-24	-24	-30
Prefailure Residual															
Postfailure															
Task Enjoyment	-49	-49		-30	-48	-28	-31	-27	-27	-24		-44	-51	-52	
Performance Evaluation	-48	-48		-28	-38	-28	-28	-27	-28	-24		-22	-23	-29	
Competitive Evaluation	-29	-29		-18	-18	-23	-29	-20	-20	-21		-22	-23	-23	
Future Expectancy	-27	-27		-24	-24	-22	-24	-22	-21	-20		-22	-25	-24	
Postfailure Residual															
End of Session															
Task Enjoyment	-21	-21		-46	-22	-19	-18	-21	-26	-26		-41	-48		
Performance Evaluation	-17	-25		-19	-19	-27	-32	-33	-30	-32		-38	-37	-31	
Competitive Evaluation	-33	-33		-27	-27	-29	-35	-39	-38	-32		-23	-30	-28	
Future Expectancy	-27	-27		-24	-24	-22	-24	-22	-21	-20		-22	-25	-24	
CIO	-37	-37		-27	-27	-18	-18	-18	-17	-17		-23	-23	-23	-32
Satisfaction	-30	-30		-34	-17	-23	-23	-20	-20	-21		-21	-25	-22	
Final Residual															
Practice Score															
Prefailure Score															
Postfailure Score															
Final Score															

Note: N = 108

r_{2,30} at p<.001

r_{2,23} at p<.01

r_{2,16} at p<.05

See text for description of measures.

Only values with p<.05 are included within the table.

Decimal points are omitted.

1. Task difficulty
2. Ability
3. Effort
4. Luck
5. Lack of motivation
6. Agent of evaluation
7. Internal (own fault)
8. Internal (worse than others)
9. Stability
10. Globality
11. Uncontrollability
12. Internal
13. Stable
14. Global
15. Uncontrollable

lower task enjoyment, more negative evaluation of performance, and negative future expectancies at all time periods, with the strongest relationships existing in the postfailure period, only the ability attribution was significantly correlated with cognitive interference. Thus both self-blame and other-blame for the failure were associated with negative ratings of performance, but only the self-blame was associated with the tendency to ruminate over poor performance.

The strongest correlations with the attribution to a lack of motivation involved the task enjoyment ratings and the measures of cognitive interference and overall satisfaction with performance confirming that, in fact, these children may not have been motivated to perform well on the task. They did not enjoy the maze task at any time and reported many off-task thoughts. All of the measures of causal dimensions also showed some degree of correlation with the performance ratings, but these varied from dimension to dimension. It can be noted, though, that correlations involving the internal dimension rating representing poor comparative performance are much stronger than those involving the internal dimension rating representing failure as one's own fault. It can also be noted that the pattern of correlations between causal dimensions and the performance ratings are very different across the two methods of assessing dimensions. Finally, it can be seen that although the correlations between causal dimensions and performance ratings are strongest during the postfailure period, when both sets of ratings were obtained, there are also many significant correlations involving the prefailure ratings, which were made before any failure was experienced.

This attributional data also provides evidence concerning certain predictions derived from Weiner's theory. The relationship between prefailure expectancies and attributions can be examined. For example, initially high expectancies, followed by failure, would be expected to be associated with less stable attributions than initially low expectancies followed by failure. Looking at the children's own ratings, the correlations between prefailure expectancy and attributions provide some support for this prediction. Prefailure expectancy was significantly correlated with the ability attribution (which would be stable), and with the stability dimension. It was also significantly correlated with the lack of control dimension.

Weiner's proposed attribution - expectancy change link can also be examined by calculating partial correlations between postfailure expectancy and attributions, with prefailure expectancy controlled for. There were no significant correlations. Partial correlations between end of session expectancies and attributions, with postfailure expectancy partialled out, however, did produce a significant correlation with the stability dimension ($r(97) = -.24, p < .008$). Marginal correlations also occurred with the ability attribution ($r(97) = -.22, p < .016$), the globality ($r(97) = -.18, p < .041$), and the controllability dimensions ($r(97) = -.17, p < .048$).

The relationships between the personality measures and attributions for failure are presented in Table 10. Most of the correlations are small in size and the pattern is scattered. Of note is an absence of significant correlations involving the CDI. Within the group of single cause ratings, as noted above, the TASC and Piets-Harris are significantly correlated with the ability attribution.

There are also a few significant correlations involving the IAR scales (e.g., IAR+ with the effort attribution, IAR- with the luck and stability attributions, IAR- (ability) with internal dimension), which are themselves attributions for performance. Of the dimension ratings, a pattern of few and scattered significant correlations is also apparent. This pattern, again, is different than that for the derived dimensions. Although there are a few larger correlations involving the derived dimensions of globality and uncontrollability, possible problems with the derivation of these two dimensions (as discussed above) makes their interpretation difficult. On the whole, however, the relationships between the personality measures and attributions for failure on the mazes are not strong.

Summary

Both specific causal attributional ratings and ratings representing the broader attributional dimensions were collected in the present study. Dimensions were also derived using computations of the specific causal ratings. The specific ratings were generally independent of each other, whereas the broader dimension ratings were significantly intercorrelated. Correlations between the specific attributions and the broader dimension ratings were not in the pattern that would be expected if the children were considering the broader dimensions when making the specific ratings. Instead, only the ability attribution was correlated with each of the broader dimensions except controllability, suggesting that a child who blames lack of ability for the failure on the mazes tends to have a broad and negative cognitive set encompassing performance relative to others, future maze performance and performance on other tasks. Causal dimensions

obtained using the two methods, though showing some convergence, did not discriminate among the dimensions clearly enough to consider the measures comparable.

The ability attribution also correlated with all of the performance ratings made. Children who were more likely to blame their lack of ability for the failure had rated performance more negatively, not only immediately following the failure, but also prior to any failure, as well as after a series of successes that came after the failure. They also reported more cognitive interference during testing. Negative performance ratings, however, were not only associated with self-blame for failure. There was also a negative correlation between the performance ratings and an external attribution to the agent of evaluation. These correlations were marginal in all but the postfailure period, in which they were significant, and there was no significant correlation with the measure of cognitive interference. An attribution to a lack of motivation (i.e., not being in the mood to do mazes) was associated with less task enjoyment throughout the session, with interfering cognitions and with less overall satisfaction with performance. There were also many significant correlations between the measures of causal dimensions and the performance ratings.

With respect to predictions arising out of Weiner's theory, there was some minimal support for an expectancy - stability linkage, in that prefailure expectancy was negatively correlated with ability and stability attributions for failure. Contrary to predictions, expectancy change following failure was unrelated to attributions for failure, although expectancy change following the final successes of the

session did correlate significantly with the stability dimension.

No clear or strong relationships between the attributional ratings and the personality measures were evident.

Underlying Processes

The CPT session provided an opportunity to explore the processes underlying the performance deficits that are associated with failure experiences. Performance on the CPT was evaluated in terms of errors made during a trial (i.e., set of 80 slides). Errors were classified as either errors of omission (i.e., failure to respond when successive slides were identical) or errors of commission (i.e., responding when successive slides were not identical). Approximately 70% of all errors were errors of commission, and the remaining 30% were errors of omission. The majority of the errors of commission (78%) were responses when two successive playing cards had the same face value, but were of different suits. For the remainder of this paper, these are the errors that will be referred to as errors of commission. The remaining 22% of errors of commission were responses when successive cards did not have the same face value. These "filler" errors were disregarded by Rutschmann et al. (1977). Because intuitively it did not seem that they represented the same type of response as the larger group of errors of commission, filler errors also were not considered in the present study. In addition, for each trial, measures were also taken of the average latency between presentation of the slide and subject response.

The CPT session allowed for an examination of changes in performance occurring during the actual failure trials. It was felt

that this examination could provide the most direct evidence of the underlying processes involved with performance changes associated with failure. Residual gain scores were calculated using the initial practice trial as the prefailure, predictor variable, and the third failure trial as the predicted variable. The use of only the first practice trial to calculate residual gain allowed for the use of the second practice trial in an examination of the relationship between performance change following failure and level of prefailure performance. The third failure trial was used as the predicted variable, rather than the final failure trial, because the results were found to be clearest. Possible reasons for this will be discussed below in the Discussion. Three separate residual gain scores were calculated from the data of the CPT session, using total errors, errors of commission and errors of omission.

Half of the children had the same experimenter across the maze and CPT sessions, whereas the other half had a different experimenter for the two sessions. There were no significant differences between these two groups in the size of any of the residual gain scores, the variable of interest in this study. There were also two different orders of presentation of the slide sets during the CPT session. Again there were no significant differences in the size of residual gain scores associated with order of presentation of the slides.

Performance Change Across the Session

The first set of analyses performed on the CPT scores examined performance across the entire CPT session. A tertiary split on residual gain scores for total errors was used in order to obtain two

extreme groups, representing those children whose performance appeared to be most disrupted by the failure (i.e., largest residual gain score), and those children whose performance appeared to be least disrupted (i.e., smallest residual gain score). Performance differences between these groups were examined and are presented in Table 11. A 2 (group) by 8 (time) repeated measures multivariate analysis of variance was performed on four dependent variables (total errors, errors of commission, errors of omission, average response latency). A significant main effect for group ($F(4,56) = 4.62, p < .003$) indicated that the two groups performed in different ways across the session. The univariate tests were significant for total errors ($F(1,59) = 17.74, p < .0001$) and for errors of commission ($F(1,59) = 17.99, p < .0001$). A significant main effect for time ($F(28,1572) = 4.99, p < .0001$) indicated that performance varied across the trials, with significant univariate tests for total errors ($F(7,393) = 21.03, p < .0001$), errors of commission ($F(7,393) = 12.96, p < .0001$) and errors of omission ($F(7,393) = 5.04, p < .0002$). Finally, a highly significant group by time interaction ($F(28, 1572) = 2.76, p < .0001$) was accounted for by total errors ($F(7,393) = 4.91, p < .0001$), errors of commission ($F(7,393) = 5.73, p < .0001$) and errors of omission ($F(7,393) = 3.08, p < .004$).

In order to further examine the nature of these group differences over time, the group means were examined for each variable at each time across the session. Group differences were compared using t-tests. The residual gain score analysis as the basis for classification ensures no group differences in total errors for Trial 1. In Trial 2, prior to any failure, the group whose

performance later became disrupted was performing marginally worse than the other group, in terms of total errors. With Trial 3, and the introduction of evaluation and failure feedback, the performance of the disrupted group is significantly poorer with respect to total errors and errors of commission. The group differences increase in size as the failure trials progress, and, by Trial 5, the two groups differ significantly in terms of every type of error. Also of interest is the fact that the latency of responding also differs significantly between groups by Trial 5. This difference in latency, however, is in a direction that indicates that the "disrupted performers" are responding more quickly, whereas the "nondisrupted" group is slowing down. By Trial 6, the group differences diminish in size, and significant differences remain for total errors and errors of commission only. As the group means indicate, however, this does not appear to be due as much to a recovery in performance by the disrupted group, as to a worsening in performance by the other group. Performance appears to recover somewhat for both groups during the final two success trials, although group differences remain significant with respect to total errors and errors of commission.

It is important to note that performance disruption was defined on the basis of residual gain score, with actual Trial 5 performance compared to that which would have been predicted on the basis of Trial 1 performance. When the actual performance across trials is examined in Table 11, it can be seen that errors remained fairly constant across trials for the "disrupted" group, whereas errors were decreasing across trials for the "non-disrupted" group.

TABLE 11
Performance Differences across CPT Trials
for Groups Formed by a Tertiary
Split on Residual Gain Scores

	TRIALS							
	Practice		Failure		Final Success			
	1	2	3	4	5	6	7	8
	M	M	M	M	M	M	M	M
Total Errors								
Group 1	6.63	6.77	3.50	3.90	2.13	3.10	2.36	2.53
Group 2	7.48	8.97	6.45	5.96	7.35	7.06	5.52	4.97
			***	**	***	***	***	***
Omissions								
Group 1	2.27	1.43	1.27	1.56	.80	1.20	1.03	.97
Group 2	3.03	2.35	2.00	1.42	2.13	1.51	1.45	1.09

Commissions								
Group 1	3.67	4.27	1.80	2.10	1.20	1.63	1.56	1.10
Group 2	3.97	4.61	3.68	3.90	4.16	4.35	3.29	3.82
			***	***	***	***	***	***
Average Latency, (msec)								
Group 1	599	603	599	607	620	602	568	580
Group 2	568	586	568	566	559	568	578	576

Note: Group 1 represents third of children with least performance disruption between Trial 1 and Trial 5, $n = 30$
Group 2 represents third of children with greatest performance disruption between Trial 1 and Trial 5, $n = 31$

* refers to significant difference at $p < .05$ between means, using t-test
** refers to significant difference at $p < .01$ between means, using t-test
*** refers to significant difference at $p < .005$ between means, using t-test
**** refers to significant difference at $p < .001$ between means, using t-test

Personality Measures and CPT Performance

The relationship between the CPT residuals and the personality measures are presented in Table 12. Looking at total errors on the CPT, the pattern is similar to the pattern found for the maze data. The strongest relationship, again, involves the IAR+ scale, and smaller relationships with the CDI and Piers-Harris are also evident. In addition, the CPT residual correlates significantly with the IAR- (ability) scale, and marginally with the poor self-evaluation subscale of the TASC.

Further information is gained when the errors are broken down into omissions and commissions. Looking first at errors of omission, residual gain score correlated significantly only with the CDI. Errors of commission, on the other hand, produced significant correlations with the TASC, particularly the poor self-evaluation subscale, the IAR+ and the IAR- (ability) scores. Thus, different manners of responding are associated with different personality characteristics in the children.

This pattern of correlations can be contrasted with the correlations between the personality measures and performance collapsed across the eight CPT trials. These results are presented in Table 13. A comparison of Tables 12 and 13 indicates that the response to failure does not necessarily parallel the overall pattern of performance. For example, whereas childhood depression was associated with greater errors of omission across the session, and a relative increase in these errors of omission when confronted with failure, the TASC and its anxiety subscale were associated with more errors of omission across the CPT session, but an increase in errors of

TABLE 12
Correlations between CPT Residuals
and Personality Measures

	<u>Residual- Total errors</u>	<u>Residual- Omissions</u>	<u>Residual- Commissions</u>
TASC	-	-	.24
TASC-anxiety	-	-	.20
TASC-somatic	-	-	-
TASC-self evaluation	.21	-	.35
TASC-remote	-	-	-
GDI	.20	.37	-
IAR+	-.33	-	-.24
IAR-	-	-	-
IAR-(effort)	-	-	-
IAR-(ability)	.30	-	.28
Piers-Harris	-.23	-	-

Note: N = 92
 $\bar{r} > .30$ at $p < .001$
 $\bar{r} > .24$ at $p < .01$
 $\bar{r} > .17$ at $p < .05$

See text for descriptions of variables.
 Only values with $p < .05$ are included within table.

commission in response to the failure. Similarly, the IAR- (ability) subscale was not associated with errors across the session, but did correlate with an increase in errors, particularly commissions, in response to failure. These contrasts illustrate the distinction between general performance and performance changes in response to failure.

Summary

The focus of the examination of the data from the CPT session was on performance deterioration during the failure trials. Using residual gain score as the index of performance disruption, it was found that those children exhibiting the greatest performance disruption following the introduction of failure, had been performing marginally worse than the "nondisrupted" group even prior to the introduction of the failure. Once failure feedback was introduced, performance differences were significant, and increased in size as the failure trials progressed. By the third failure trial, performance disruption was associated with more errors of all types, and a quicker latency of responding.

The examination of the relationship between the CPT residual gain scores and the personality measures showed that, for total errors, a pattern of relationships similar to that found for the maze session existed, with the strongest relationship apparent for the attributional measures. When errors are broken down into omissions and commissions, however, it was found that depression was associated with the residual gain score based upon errors of omission, whereas residual gain scores based upon errors of commission correlated with the poor self-evaluation subscale of the TASC, and the endorsement of ability attributions for failure on the IAR.

TABLE 13

Correlations between Overall CPT Performance
and Personality Measures

	Total CPT Errors	Total CPT Omissions	Total CPT Commissions
TASC	.28	.26	-
TASC-anxiety	.29	.32	-
TASC-somatic	-	.18	-
TASC-self evaluation	.25	-	.21
TASC-remote	-	-	-
CDI	-	.31	-
IAR+	-.28	-.19	-.23
IAR-	-	-	-
IAR-(effort)	-.27	-	-.28
IAR-(ability)	-	-	-
Piers-Harris	-.20	-	-.17

Note: $N = 92$
 $r > .30$ at $p < .001$
 $r > .24$ at $p < .01$
 $r > .17$ at $p < .05$

See text for descriptions of variables.
 Only values with $p < .05$ are included within table.

Consistency in Maladaptive Responding

In order to determine whether there is any consistency across tasks in the manner in which children respond to experiences of failure, comparisons were made between the maze and CPT sessions. Correlations were calculated between the residuals for the two sessions. Given the importance of different types of errors, residuals based upon time taken to complete the postfailure mazes, blind alley entrances, and drawing errors were calculated for the maze session. For the CPT session, residuals based upon total errors, errors of commission, and errors of omission during the failure trials were used. None of the nine correlations thus produced achieved significance.

It should be acknowledged, however, that the maze session residuals were based upon postfailure performance and the CPT residuals were based upon performance while the failure was still being experienced. These two types of residuals are not completely analogous. The final success trials of the CPT session, however, also allow for a calculation of CPT postfailure residual gain scores, with the initial prefailure trial as the predictor variable and the final success trial as the predicted variable. [These postfailure residual gain scores were significantly correlated with the residual gain scores calculated on the basis of performance during the failure trials-- $r(91) = .38$, $p < .001$ for total errors; $r(91) = .32$, $p < .001$ for errors of omission; and $r(91) = .54$, $p < .001$ for errors of commission -- indicating that they are related, though not equivalent.]

With CPT residuals based upon postfailure performance, then, (analogous to those calculated for the maze session), the residual based upon total errors on the CPT was marginally correlated with the

maze residuals based upon time for completion of the mazes ($r(91) = .22, p < .02$), and blind alley entrances ($r(91) = .19, p < .036$). The CPT residual based upon postfailure errors of commission marginally correlated with the maze residual for blind alley entrances ($r(91) = .18, p < .045$), whereas the CPT residual based upon postfailure errors of omission correlated significantly with the maze residual based upon time taken to complete the mazes ($r(91) = .24, p < .01$). Thus, there is some very limited evidence of consistency with analogous residuals, and errors of commission on the CPT are associated with entry into blind alleys on the mazes, whereas errors of omission on the CPT are associated with a slower performance on the mazes.

Despite this minimal evidence of cross-session consistency within individuals, it can be noted that for both the maze and the CPT sessions, the IAR+ score was most strongly correlated with the residual gain score. In fact, when a tertiary split on IAR+ scores is used to classify the sample into three groups, there are significant group differences for the two extreme groups both for the maze residual ($t(60) = -2.84, p < .006$) and for the residual based upon total errors on the CPT ($t(60) = -2.61, p < .01$). Thus, there is some consistency in responding at the group level, in that children who take little responsibility for their achievement successes, as assessed by the IAR, showed more performance deterioration on both the maze task, and the CPT task, than children who do take responsibility for their achievement successes.

A rating of how well the children evaluated their performance on the CPT was also obtained in order to check on the effectiveness of the failure manipulation. The average rating was 2.72 with a standard

deviation of 1.04, indicating that the children saw their performance as being poor. This evaluative rating on the CPT also correlated significantly with the postfailure ($r(92) = .42, p < .001$) and end of session ($r(92) = .28, p < .003$) evaluative ratings of the maze session and marginally with the prefailure evaluative rating of the maze session ($r(92) = .20, p < .03$), suggesting that there was also some cross-session consistency in the way children evaluate their performance in achievement situations particularly those involving failure.

Summary

A set of postfailure residuals from the maze session (based upon time taken to complete the mazes, blind alley entrances, and drawing errors) was not related to the set of CPT residuals (total errors, omissions, and commissions) based upon performance while failure was occurring. This suggests that there was little consistency in response to failure across the two sessions. When postfailure residuals are calculated for the CPT session, some minimal evidence of consistency is shown. Those children who were committing more errors of omission than predicted during the postfailure CPT trials were taking longer than predicted to solve the postfailure mazes. Those children who were committing more errors of commission than predicted during the postfailure CPT trials were making more blind alley entrances than predicted on the postfailure mazes.

Although at the individual level, there was only this minimal evidence of a consistent manner of responding to failure, it was shown that for both the CPT and maze tasks, those children who were most likely to show performance deterioration following failure were from

the group of children who were least likely to accept responsibility for successes when completing the IAR.

Finally, in looking at performance ratings, rather than performance change, there was some evidence of cross-session consistency in the way children evaluate their level of performance following experience with failure.

School Measures

School grades and teacher ratings were also collected in this study in order to determine whether the behavior that was exhibited during these experimental sessions was related, in any way, to the behavior observed by teachers within the classroom.

Table 14 presents the correlations between the school measures and the personality measures. Looking first at average grade, again the failure score of the IAR (IAR-), and its component effort and ability scores show little relationship. Also, the Piers-Harris did not relate to grades. All of the remaining personality measures were strongly correlated with grades.

With respect to teacher ratings, the correlations, though significant, are relatively small. For example a teacher's rating of the test anxiety level of a student correlates only .27 with the student's own overall rating of test anxiety. The pattern of correlations with the personality measures are similar for both teacher ratings of test anxiety and tendency to give up, and these two measures do show a significant positive correlation ($r(99) = .48$, $p < .001$). Teachers, therefore, see much overlap between the two phenomena of being anxious in test situations, and becoming discouraged and giving up when faced with failure.

TABLE 14

Correlations between Personality
Variables and School Measures

	<u>Average Grade*</u>	<u>Teacher Rating- Test Anxiety+</u>	<u>Teacher Rating- Gives up with Failure+</u>
TASC	-.51	.27	.29
TASC-anxiety	-.55	.27	.29
TASC-somatic	-.32	-	-
TASC- self-evaluation	-.36	.22	.22
TASC-remote	-.24	.33	.20
CDI	-.34	-	-
IAR+	.48	-.31	-.27
IAR-	.20	-.19	-
IAR-(effort)	-	-.27	-
IAR-(ability)	-	-	-
Piers-Harris	-	-	-

Note: Only values with $p < .05$ are included within the table.
See text for description of variables.

*n = 88

$r > .31$ at $p < .001$

$r > .24$ at $p < .01$

$r > .18$ at $p < .05$

+n = 100

$r > .30$ at $p < .001$

$r > .23$ at $p < .01$

$r > .16$ at $p < .05$

Even stronger are the correlations between teacher ratings and school grades ($r(81) = -.44, p < .001$ for teacher rating of test anxiety, and $r(81) = -.60, p < .001$ for teacher rating of giving up). Thus, a teacher's ratings of how a student responds to evaluation and failure show strong relationships to actual achievement in school.

The relationships between the school measures and performance, performance change (i.e., residual gains), and performance ratings from the maze session were also examined. Little correspondence was evident. Maze performance was unrelated to grades or teacher ratings. With respect to performance ratings, a significant relationship between school grades and the CIQ ($r(81) = -.38, p < .001$) was obtained, and the teacher ratings showed marginal correlations with the CIQ ($r(99) = .21, p < .02$ for test anxiety, and $r(99) = .18, p < .04$ for giving up). In addition, only with residual gain score based upon drawing errors in the postfailure period was there a significant correlation between performance deterioration and school grades ($r(88) = -.24, p < .01$).

The relationships between the school measures and the performance and residual gain scores of the CPT session were also calculated. Teacher ratings and school grades were significantly correlated with total errors made during the CPT session (see Table 15). School grades, but not teacher ratings, were also correlated with the CPT residual for total errors ($r(82) = -.26, p < .009$) and for errors of commission ($r(82) = -.30, p < .003$).

Summary

Test anxiety, depression, low self concept, and external locus of control for achievement successes negatively correlate with grades

obtained in school. They also correlate with teacher ratings of test anxiety and tendency to give up when failing, which are themselves correlated. Furthermore, these teacher's perception of test anxiety and tendency to give up when failing correlate strongly with school grades.

Performance and performance ratings during the maze session showed little relationship to school grades or teacher ratings of behavior in school. Performance on the CPT task did, however, correlate with school grades and, to a lesser extent, teacher ratings, and performance disruption during failure on the CPT task correlated with school grades, as well.

Discussion

"Given the pervasive tendency in our society to equate the ability to achieve with human value" (Covington, 1983, p. 147), much research interest has been devoted to studying factors that influence such achievement. Recent research has indicated that, independent of ability, motivational factors guide a child's pursuit of achievement goals and influence a child's performance in achievement settings (Dweck & Elliott, 1984; Hill & Wigfield, 1984). Moreover, the experience of failure within such a setting appears to be a stimulus condition that creates a situation in which motivational factors play a large role in determining performance and the way it is perceived. Because, for most children, some degree of failure is an inevitable part of learning, the focus of the present research was upon examining the influences of failure upon a child's performance and his or her interpretation of it. A review of the literature in several

areas of research had indicated that there are wide individual differences in the ways in which children interpret and respond to experiences of failure. This study investigated many issues of relevance to these individual differences.

Overlap Among Personality Variables

The literature review had shown that findings in the areas of attribution theory, self-concept, learned helplessness, test anxiety, and depression were all relevant to an examination of individual differences in children's responses to failure. As Dweck and Wortman (1982) pointed out, there are striking but, thusfar, neglected parallels in the empirical findings in these theoretically distinct areas which made an examination of the relationships among the personality variables an important consideration.

In fact, in the present study, test anxiety, depression, locus of control (for achievement successes only), and global self-concept were all significantly correlated, and it was shown that there would be considerable overlap among groups of children who would have been classified in previous studies as high and low test anxious, depressed and nondepressed, high and low self-concept, and internal-external locus of control.

Although the entire set of variables has not been examined simultaneously in previous studies with children, the results are consistent with the findings of more limited previous studies (e.g., Kovacs, 1983; Piers, 1977). They are also consistent with the results of studies with adults, such as those of Gotlib (1984), who found significant intercorrelations among 17 different pathology scales, assessing characteristics such as depression, anxiety, dysfunctional

attitudes, assertiveness, and hostility, in a nonclinical sample of university students.

There are a number of possible explanations for this finding. It may be that depression, test anxiety, and low self-concept are highly interrelated characteristics. It may also be that an external locus of control is a factor that mediates depression, test anxiety, and low self-concept in children. As Gotlib (1984) discusses, these measures may be tapping a more general underlying psychological distress. It may be that the constructs themselves are not clearly differentiated. Finally, it may be that the observed relationships are a function of a response bias to present oneself in a negative or sympathy-eliciting light. Although it is not possible, in the present investigation, to tease apart these various alternative explanations of the finding, the finding itself has important implications for research in any one of these relevant areas.

For example, in a study using groups of high and low test anxious children, it appears that these groups might also differ significantly in terms of measures of depression, self-concept and locus of control. Any group differences in other characteristics (such as the measures obtained in the present study), then, would not be specific to the test anxiety factor. Similar results would be expected (and have been found) if depression, or self-concept, or any number of other variables rather than test anxiety, had been used as the sorting variable. Group differences may not be accounted for by test anxiety at all. (In this same vein, Ford, Pelham and Ross (1985) recently concluded that the selective attention deficits found among test anxious children may actually be a result of poor reading ability

among this group, rather than anxiety.) In order to test theory-based predictions, it is imperative to be able to attribute group differences to a test anxiety factor. Given the overlap among the personality variables in the present study, this would not be possible unless the level of the other characteristics was controlled for. Gotlib (Cane & Gotlib, 1985; Gotlib & Robinson, 1982), in using a subclinical population of university students, reports difficulty in running studies utilizing such control. Given the extent of the correlations in the present results, similar difficulties would be anticipated in studies with children.

With the extent of the overlap observed in the present study, Dweck and Wortman (1982) appear justified in combining results from the research in these various areas and using them to develop their construct of maladaptive responding.

The Construct of Maladaptive Responding

The construct of maladaptive responding, as it has been referred to in the present study, is an individual difference variable referring to the manner in which children respond when faced with a difficult or challenging achievement situation. In brief, Dweck and Wortman (1982) hypothesized that, in such a situation, some children respond maladaptively, focusing on themselves rather than the task at hand, evaluating their performance negatively and overly critically, blaming themselves for failures that occur, not enjoying the task, anticipating poor performance in the future, and inevitably giving up quickly or showing performance decrements after experiencing initial failure. Other children respond more adaptively, remaining focused on task and involved, enjoying the task, evaluating their performance optimistically

or realistically, viewing failure as temporary or surmountable, and maintaining or improving performance levels.

One major purpose of the present investigation was to empirically investigate this construct of maladaptive responding, by examining whether, within a single sample of children, there appear to be individual differences in this set of characteristics, and whether the characteristics systematically co-vary.

The results of the study provide some, though not total, support for Dweck and Wortman's (1982) construct. There are individual differences in each of the measures used to represent the characteristics of maladaptive responding, and most of these characteristics were significantly intercorrelated. There was a significantly intercorrelated cluster among the performance rating variables. These included evaluation of own performance, evaluation of own as compared to other performance, task enjoyment, future expectancies, self-focus, and self-blame. This finding makes intuitive sense. For example, a lower evaluation of performance, particularly when coupled with self-blame, would be associated with lower future expectancies. Similarly, it might be anticipated that a task that is negatively evaluated would be enjoyed less, and that lower evaluation of performance would be associated with a greater frequency of cognitions related to poor performance.

The factor analytic results also provided support for the construct. Two coherent factors emerged, with the first accounting for 80% of the total variance. Interestingly, this first major factor appeared to represent an affective response to being in the test situation, and expectancies concerning performance in such a

situation. Thus, one type of maladaptive responding appears chiefly to be a dislike of, and discomfort in, achievement settings, with negative expectancies about, and dissatisfaction with, performance. The second smaller factor represented evaluation of performance, and concerns about one's evaluation.

Contrary to predictions arising out of Dweck and Wortman's theorizing and from other relevant literature, however, these performance ratings were unrelated to the measure of performance change following failure. In light of the fact that these performance rating variables are often invoked to account for the performance change (e.g., future expectancies are hypothesized to account for performance deterioration within the learned helplessness paradigm), the absence of any relationship between the two is surprising and significant and will be discussed in greater detail below.

Looking again at the performance ratings, the pattern of significant intercorrelations was evident across each of the three time periods of the maze session. In addition, any one performance rating was highly correlated with the same performance rating made during another time period. Thus, if we consider the cluster of performance ratings to be representative of a more or less maladaptive response style in the maze session, individuals exhibiting a relatively more maladaptive pattern immediately following the failure, were also exhibiting a relatively more maladaptive pattern prior to any objective failure, and following the several final experiences of success. This pattern of maladaptive responding occurred in the absence of any objectively poorer actual performance. With very little information to base a decision upon (aside from the failure trials, the maze task

provided only minimal feedback with respect to level of performance), some children entered the maze session with relatively low expectancies concerning how well they would do and, irrespective of how they actually did, interpreted their performance in line with this initial expectancy, as well as blaming themselves for this poor performance and thinking about it when they should have been focused on the task. Aside from ratings of task enjoyment, there was, however, no particularly negative effect of the failure problems that were intended to make the task appear challenging in order to elicit this maladaptive response style for this group.

It is possible, as Dweck and Gilliard (1975) have suggested, that "the solicitation of an expectancy statement introduces at the outset the success - failure dimension into what otherwise may not have been a highly achievement-oriented situation" (p. 1077). Having the children make that initial expectancy rating may have made the maze session appear challenging and somewhat threatening before any failure was introduced. For children who are particularly aware of the possibility of failure during an evaluative task, as Dweck and Wortman's (1982) maladaptive responder would be, the simple elicitation of an expectancy may be sufficient to initiate this pattern of maladaptive responding. Given the subsequent series of ratings, reinforcing the evaluative nature of the session, the maladaptive response pattern would be expected to persist across the session, and would account for the consistency throughout. Dweck and Gilliard (1975) did find that requiring expectancy statements prior to every trial resulted in lower final expectancy ratings than those made by children who were asked to state final expectancies only, though

consistency in ratings across the session was not assessed in that study, and the reason for the finding was not clear.

Another possibility, as others have noted (e.g., Coyne & Gotlib, 1983; Dweck & Gilliard, 1975; Mischel, 1958; Schlenker, 1980; Zajonc & Brickman, 1969), is that soliciting that initial expectancy statement is seen as a public commitment to a particular level of performance. Making an evaluative rating that is not in line with the initial expectancy rating may be viewed as the breaking of this public commitment, and a situation to be avoided. The consistency apparent across the session, then, may reflect some perceived obligation on the part of the subject to maintain consistency with that initial rating for the sake of the examiner. The initial rating itself, though, may reflect a child's actual expectancy or it may be a function of the way a child wants to present him- or herself in front of the examiner.

It is also possible that the initial rating of expectancy, and the consistent evaluation that followed it represent a personal, rather than a public, commitment to a consistent view of oneself. This study's findings are also consistent with such an explanation, related to the concepts of an individual's self-schemata, and its component element, self-efficacy.

Turk and Speers (1983) define self-schemata as the "structural constellation of knowledge and attributes about oneself derived from previous experience, including one's behavior in different situations" (p.15). Self-efficacy refers to "the conviction that one can successfully execute the behavior required to produce a suitable outcome" (Turk & Speers, 1983, p. 16). Schunk (1983), in discussing self-efficacy, considers that it applies to situations that may contain

novel, unpredictable and possibly stressful elements. The maze task, even prior to failure, may have represented such a situation to the children in this study, and their initial expectancy rating, then, may have represented a judgement of self-efficacy for the maze task.

Self-schemata provide a framework against which current information is processed and evaluated. "The strength of people's convictions of their own effectiveness is likely to affect what they infer about their own behavior" (Turk & Speers, 1983, p. 16), such that there is a confirmatory bias. "Self-schemata search for information that is congruent with them..." (Markus & Senti, 1982). The initial expectancies about how well they would do may have coloured and shaped these children's interpretations of performance, despite being unrelated to actual performance.

Alloy (1982), in reviewing the learned helplessness literature, has discussed similar issues with respect to the assessment of personal control or contingency in helplessness studies. "It is likely that subjects in learned helplessness studies enter the experimental situation with strong well-articulated schemata about their personal control over a wide range of events based on everyday experience... When objective data and preconceptions are incongruent, judgements of contingency will frequently be erroneous and biased in the direction of initial expectations, except in those instances in which the situational information is particularly strong" (p. 466).

In the present study, the influences of both personal schemata and situational information can be seen. The failure experience, which was particularly strong, resulted in a lowering of the performance ratings for all of the children in the study. Yet, in

general, aside from the outside limits of failure (the "red x") and very good performance (the "black O"), the children did not have an obvious standard against which to judge performance. Even for ratings made in the immediate postfailure period, the children were told to consider all performance up to that point. Thus, the initial expectancy rating, if taken as an index of self-efficacy, was also related to subsequent performance ratings obtained throughout the session.

It is not possible, based upon the data obtained in the present study, to clearly sort out which of these possibilities does account for the finding of consistency in ratings across the session. In fact, these alternatives may not be mutually exclusive. Private beliefs and public statements can influence each other (Schlenker, 1980). For example, the selective perceptions of information described by a self-schemata explanation may be as much a function of one's desire to present a consistent picture of oneself to the world as it is to present a consistent view to oneself. Moreover, it may be only in situations that appear evaluative and, thus, somehow important that the consistency associated with either a public or personal commitment is deemed important.

The issue warrants further investigation. The implications of the finding, however, are that in order to investigate individual differences in responses to failure, it is necessary to also include prefailure measures, in order to be able to separate the influence of a response style that is evident initially in the session from one that is a result of failures experienced upon any performance ratings made.

Personality Variables and Maladaptive Responding

Dweck and Wortman (1982) hypothesized that a maladaptive response style is more characteristic of those who are test anxious, depressed, low self-concept, and helpless. This study also examined, therefore, the ways in which these personality variables related to the set of performance ratings made and the measures of performance change.

Interestingly, the initial expectancy rating which, as discussed above, showed much predictive value with respect to all subsequent ratings made, was unrelated to any of the personality measures obtained. Thus, a child's feelings of efficacy with respect to maze performance, or perhaps, more generally with respect to ability to perform in a novel and possibly threatening situation, was unrelated to self-report measures of global self-concept, depression, test anxiety, or locus of control. Yet, if self-schema are "domain-specific cognitive generalizations about the self, presumably derived from past experience" (Nisbett & Ross, 1980, p. 197), then correspondence between this specific domain and the more global measures would not necessarily be anticipated.

There were, however, important relationships between the personality measures and the other performance ratings made during the actual maze testing session. In particular, test anxiety and depression showed significant patterns of relationship with the performance ratings. (Despite the significant intercorrelations among the personality variables, global self-concept and the locus of control measures showed few significant relationships with the performance ratings. The few relationships that did occur involving self-concept

were with ratings made in the prefailure period. This is consistent with the findings of Ames (1978) and Ames and Felker (1979) showing self-concept group differences in an attributional rating for success, but not for failure. Across these several studies with children, then, level of self-concept appears most related to interpretations of successful performance, rather than failure).

Test anxiety, and to a lesser extent depression, were associated with a lower level of enjoyment derived from the task at all times during the session, and a greater reported incidence of interfering cognitions during the session. Depression, and to a lesser extent, test anxiety were associated with a more negative evaluation of performance both prior to any failure and at the end of the session. (The failure manipulation may have been so strong that even nondepressed and low test anxious children could not justify a positive evaluation of performance during the postfailure period). A small relationship existed between the TASC remote concerns subscale and future expectancies during the prefailure and postfailure periods. The strongest relationships with expectancies occurred at the end of the session, however, with significantly negative correlations with both depression and the somatic TASC subscale. Both test anxiety and depression were also associated with lower satisfaction with performance. (In line with theoretical predictions and previous research findings, test anxiety was more strongly associated with cognitive interference and a more negative comparative evaluation, whereas depression was more strongly associated with more negative evaluation and future expectancies).

This pattern of relationships suggests that although higher test

anxiety and depression are generally associated with lower enjoyment of achievement situations and more negative evaluation of performance (except in those instances in which failure is so blatant that no one could deny it), perhaps the most important implication of these performance rating - personality correlations relates to the overall or general impression about performance held at the end of the session and expectancies for future performance carried away from the session. The end of session ratings might be considered to represent an index of recovery from the failure experiences. These ratings allow an examination of the ways in which the children integrated the five failures within the total picture of performance on the seventeen mazes. With recovery so defined, higher test anxiety and depression were associated with a poorer recovery from failure.

The learned helplessness model proposes that one of the deficits associated with helplessness is a cognitive one. Learning that an outcome is uncontrollable makes it difficult to later learn that responses can produce an outcome. Although it has proven difficult to actually separate the cognitive from the motivational deficits in learned helplessness research with adults (see Abramson, Alloy, & Rosoff, 1981; Alloy & Abramson, 1979), this finding of poorer recovery from the failure among the more highly depressed and test anxious children of this study is consistent with such a cognitive deficit. Successful performance on the final six mazes of the session was not as likely to be recognized or incorporated following the failure experience.

Mischel (1973) has suggested that "...the essence of adaptive performance is the recognition and appreciation of new contingencies.

To cope with the environment effectively, the individual must recognize new contingencies as quickly as possible and reorganize his behavior in the light of new expectancies" (p. 270). In this sense, neither the more highly depressed nor more highly test anxious children were performing as adaptively as their less test anxious, less depressed peers.

These results are consistent with the findings of studies with both depressed adults (see Coyne & Gotlib, 1983) and children (Kaslow et al., 1984; Sacco & Graves, 1984) showing selective recall of negative information and/or poorer recall of positive information about the self among those more highly depressed. The results also suggest that the same phenomenon may apply to individuals classified as test anxious.

Although performance change and performance ratings were unrelated, the measures of performance change utilized in the present study also did relate to the personality variables. For both sessions of this study, the residual gain score (based upon time taken to complete the mazes and total errors on the CPT task) was most strongly correlated with the IAR+ subscale of the IAR. For the CPT session, the IAR- (ability) scale was also significantly correlated with residual gain. Smaller correlations with the measures of test anxiety, depression, and low self-concept may have been accounted for by their relationship to these locus of control measures. This result is similar to Ickes and Layden's (1978) finding that the impairment in performance following failure that was associated with low self-esteem in their adult subjects disappeared when the attributional tendency to internalize one's failure was measured independently of level of self-

esteem. In that study and in this one, the tendency to internalize one's failure (by blaming oneself), coupled with the inability to accept credit for one's successes was associated with a decrease in level of performance following failure. Maintaining performance levels in the face of failure is associated with an ego-enhancing attributional style.

In examining relationships involving the personality measures, certain deviations from the results of previous studies are notable. The IAR- (effort) subscale, which Dweck and her colleagues (Diener & Dweck, 1978, 1980; Dweck & Repucci, 1973; Licht & Dweck, 1984) have used to classify helpless and mastery-oriented children was unrelated to either the performance rating or performance change data and was also unrelated to any of the other personality measures. This contrasts with Dweck's findings of differences between the helpless and mastery-oriented groups on a similar set of performance rating variables, as well as on indices of performance change following failure. In fact, although both the IAR+ and IAR- (ability) scores showed relationships with performance change or the other personality measures, the lack of any significant correlations involving the IAR- (effort) score are striking in light of the emphasis that has been placed upon this variable in the learned helplessness literature. Piers (1977) similarly found no correlation between the IAR- score and the Piers-Harris score, although IAR+ correlated significantly with Piers-Harris self concept. As well, although it does not appear that they used exactly the same subset of IAR items as Dweck and her colleagues, Kramer and Rosellini (1984) found results opposite to those they had predicted based upon Dweck's classification scheme. Children who were predicted to show superior performance following

exposure to noncontingency based upon their IAR scores, actually showed performance inferior to that of children predicted to perform more poorly.

Aside from differences in the samples studied, the reason for the disparity between this study and Dweck's findings is unclear. These results do highlight, however, problems in the ways in which helplessness has been defined in the literature, particularly with children. As Eccles, Adler, and Meece (1984) and Kramer and Rosellini (1984) recently pointed out, learned helplessness has been operationally defined in a variety of ways. Learned helplessness has been defined using criteria including teacher nomination (e.g. Dweck, 1975; Weisz, 1981), exhibiting of a debilitated behavioral response to failure (Dweck & Repucci, 1973; Kramer & Rosellini, 1984; Rholes et al., 1980), scores on the IAR- (effect) scale (Diener & Dweck, 1978, 1980; Licht & Dweck, 1984), attributing failure to ability (Eccles et al., 1984), and low expectancies for future performance (Butkowsky, 1981). Eccles et al. (1984) had measures of attributions, expectancies, and debilitated performance in their study and, although they did not directly look at the interrelationship among them, they concluded that the paper-and-pencil indices (attributions and expectancies) and behavioral indices did not yield converging evidence. They cautioned against inferring, rather than empirically establishing, a relationship between attributions and expectancies and actual behavior. Similarly, in the present study, although the paper-and-pencil ratings of attributions and expectancies were intercorrelated, they were unrelated to performance deterioration and all were unrelated to teacher rating of learned helplessness. The

IAR- (effort) score was unrelated to any of these measures. There is a strong need, then, to more precisely define what is meant by learned helplessness when it is being studied in children.

The relationships involving the individual TASC subscales are also interesting. Although it was the poor self-evaluation subscale of the TASC which was associated with performance deterioration following failure, at least during the CPT session, for the maze session task, enjoyment across the session related most strongly to the subscale of the TASC assessing remote concerns. In the end of session period, the strongest relationships involved the somatic subscale. The poor self-evaluation and the anxiety subscales showed limited relationships with the performance ratings. This lies in contrast to Nicholls' (1976) emphasis on the anxiety and poor self-evaluation factors of the TASC, and his conclusion that many of the relationships that have been found between the TASC and other variables are a result of the poor self-evaluation factor.

Although remote school concerns may be considered to be an index of worry, the importance of the somatic subscale also lies in contrast to the general emphasis within the test anxiety field on the cognitive (worry) as opposed to emotionality (physiological) component of test anxiety and warrants further consideration.

Galassi et al. (1981b) have found that sensations of arousal accumulate towards the end of a test. The accumulation of such sensations at the end of the maze session in those children who report a stronger somatic component to their test anxiety may have made it difficult for them to forget about the failures they had experienced

in order to more objectively evaluate the total picture of performance.

Although there is a large literature documenting the existence of a negative relationship between task performance and the worry component of test anxiety (e.g., Deffenbacher, 1980), there is little relevant literature concerning the relationship between test anxiety and cognitive behaviors such as the performance ratings made in the present study (Fox & Houston, 1983). Fox and Houston (1983) developed self-report measures of cognitive and somatic anxiety for children, and examined the relationship between these measures and both task performance and cognitive ratings. Consistent with previous findings, cognitive anxiety was negatively related to task performance, whereas somatic anxiety showed no such relationship. Both cognitive and somatic anxiety, however, were associated with greater cognitive preoccupation during an anticipation period prior to a test. Although only cognitive anxiety was significantly associated with other cognitive ratings (e.g., performance denigration, lower frequency of certain positive thoughts) made during the session, given the accumulation of somatic sensations at the end of a test and the results of the present study indicating different somatic - performance ratings associations between the beginning and the end of the session, it is possible that other somatic anxiety - cognitive rating associations would have been found if these had been measured after the task. Task performance and ratings of performance were unrelated in the present study. It appears important, then, to examine the relationship between somatic manifestations of anxiety and these two variables separately. It may be premature to abandon the

physiological component of the anxiety experience when test anxiety is being studied in children.

Causal Attributions

Causal attributions have received increasing emphasis within the various bodies of literature exploring children's responses to experiences of failure. Yet causal attributions also have been assessed in various ways in the literature. In much of the literature with children, the focus has been on the selection of single causes (see Stipek & Weisz, 1981), particularly the standard four causes of ability, task difficulty, effort, and luck. Other research has combined these single causes to derive scores, supposedly representing the underlying dimensions of internality, stability, globality, or controllability (e.g., Butkowsky, 1981). A third approach, not often used with children, has been to have subjects make single ratings on the actual dimensions themselves.

Although it is assumed that the use of these various methods of assessing attributions is tapping the same underlying processes, this study allowed for an empirical examination of the extent to which this is true. It also allowed for an examination of the relationships between these various assessments of causal attributional reasoning and the other characteristics of maladaptive responding as assessed in this study.

Looking first at the pattern of relationships among the causal attribution ratings made, the single cause ratings were found to be relatively independent. Lack of motivation, however, showed a small but significant pattern of intercorrelations with all of the single causes except for ability. Although the relationships are small, it

may be that some children are able to use an ego-defensive mechanism to explain the failure, implying that the results of the maze testing are unimportant to them, and that, with better luck, stronger motivation or effort, or a different evaluator, the results could have turned out more positively.

The broader rated dimensions of attributions were intercorrelated to a significant degree. Peterson, Semmel, von Baeyer, Abramson, Metalsky, and Seligman (1982) found a similar degree of discriminability (or lack thereof) among the broad dimensions of attributions for failure outcomes (internal, stable, global) assessed on the Attributional Style Questionnaire (ASQ). Adults and children, then, do not appear to reason about the causes of events in ways that finely discriminate among the defining characteristics of the dimensions.

This conclusion is also supported by the lack of a clear relationship between the dimensions that were computed from single causes according to assumptions about their underlying properties and the dimensions as rated by the children. Though some convergence was apparent, the discriminability among dimensions was not clear, and the two methods of assessing causal dimensions produced very different patterns of relationships with other variables assessed in the study. Although one might hypothesize that this finding can be attributed to a lack of cognitive maturity within this sample of children, in fact, Krantz and Rude (1984) recently found an equally poor convergence between causal dimensions computed from specific causes and ratings of perceived dimensions in a sample of university students. Such a finding must be considered by those designing research studies, and by

anyone attempting to draw conclusions about underlying dimensions when only single cause ratings are assessed (e.g., Dweck, 1975). Children do not necessarily think about single causes according to the dimensions that researchers might assume to be underlying them.

An examination of the pattern of single cause - rated dimension correlations provides further evidence of this conclusion. Only the specific ability attribution for failure showed a significant pattern of correlations with the dimension ratings of the study, and was significantly correlated with each of the internal, stable and global dimensions. Children who were more likely to blame their own lack of ability with mazes for the failure outcomes were also more likely to see the failure as being their own fault, to believe that their performance on the task was more negative than that of others, and to believe that performance would remain poor across different tasks or times. This appears, then, to represent a broad and negative style of interpreting the causes of the failure.

How do these various measures of causal attributions relate to the other variables assessed in this study? There were many significant correlations between measures of causal attributions and the children's performance-related ratings. In general, the ability attribution for failure was most strongly related to the performance ratings across the entire maze session, confirming its appropriateness as a part of a construct of maladaptive responding. One of the strongest correlations involving the ability attribution was with the initial expectancy rating, providing some evidence that this initial expectancy may relate to a child's perceived ability with mazes. Apart from the ability attribution, none of the other three standard

causes (i.e., luck, task difficulty, or effort) showed any consistent pattern of relationships with the performance ratings of this study. The absence of significant associations involving the effort attribution stands in contrast to the emphasis that has been placed upon this attribution. The finding of the strongest relationships with performance ratings involving the ability attribution is consistent with other findings in the literature. Dimitroff, Bereiter, and Wong (1979) also found that, of the standard four single cause attributions, only ability was correlated with expectancy of success. Similarly, Nicholls (1979) found that the strongest attribution - perceived attainment correlations in his study involved the ability attribution. Ames and her colleagues (Ames & Ames, 1978; Ames, Ames, & Felker, 1977) have found that effort attributions are more salient in noncompetitive situations, whereas children emphasize ability and luck in competitive conditions.

Two other single cause attributions, aside from the standard four, were included in this study. Both of these, agent of evaluation and lack of motivation, also showed patterns of significant relationships with the performance ratings. Despite an independence between ability and agent of evaluation attributions, the two share a very similar pattern of relationships with the performance ratings. Greater endorsement of both the ability and the agent of evaluation attributions was associated with less enjoyment, poorer evaluation, and lower future expectancies, particularly in the postfailure period.

Yet, associations with comparative evaluation of performance, interfering cognitions and satisfaction with performance are not as strong for the agent of evaluation attribution. One might

hypothesize, then, that attributing one's failure to the agent of evaluation is associated with less of a personal, and more of a universal orientation in viewing the failure, than blaming one's lack of ability. If the agent of evaluation is at fault, then it is likely that other children will be doing poorly as well. There is less need to ruminate over poor performance and satisfaction with performance is not as strongly affected because outcome is not solely one's own fault. Yet this tendency to blame the agent of evaluation is, to a small extent, also associated with lower task enjoyment, more negative performance evaluation and more negative expectancies even prior to the failure. Some children, then, may enter the experimental session expecting to do poorly, and perceiving their performance negatively yet they did not blame themselves when failure actually occurred. The co-existence of a selectively negative perception of performance with a self-protective attributional pattern is an interesting combination, and warrants further study.

The attribution to a lack of motivation was also associated with lower task enjoyment throughout the session, interfering cognitions, and lower satisfaction with performance. It was not, however, associated with either negative evaluation or negative expectancies. Another group of children, then, didn't enjoy the maze task and attributed their poor performance to the fact that they didn't want to be doing mazes, but were neither negative in their evaluation of performance nor their expectancies concerning performance, possibly because they did not need to see their performance as being evidence of their potential. Important patterns of relationships exist, then, with attributions other than the standard set of four. Looking at

dimensions of causality, the derived dimensions computed from the single causes for globality and controllability were significantly correlated with most of the performance ratings, but the relationships were smaller and fewer for internality and stability. Similarly, each of the rated dimensions also showed a pattern of correlations with performance ratings across the session, though the relationships were fewer and smaller for the internal rating representing failure as being one's own fault. None of the patterns of correlations with the indices representing the dimensions of causality were as strong as the set of correlations involving the ability attribution.

It can be noted that there were few significant relationships with the dimensional rating representing failure as being one's own fault. Instead, the internal dimension representing poor performance relative to others showed a stronger pattern of relationships with the ability attribution, the dimensional ratings derived from the single causes, and the performance ratings.

The attribution - performance rating relationships can also be used to examine predictions about the stability - expectancy link arising from Weiner's theory (Weiner, 1979, 1982). Consistent with the results of McMahan (1973), prefailure expectancy correlated negatively with the ability attribution, and, to a lesser extent, with the stability dimension, and the controllability rating. Since the failure would have represented a confirmation of expectancy for those with low initial expectancies, it follows that attributions would be made to these relatively stable factors. In the postfailure and end of session periods, attribution - expectancy correlations were also strongest for the stable attributions of ability and agent of

evaluation, and the stability dimension, although there were also marginal relationships for the other dimensions as well. Unlike the findings from other studies, there were no significant correlations with expectancy for any of the unstable attributions.

Providing a better test of Weiner's theory (see Weiner, 1983) is an examination of the attribution correlations with expectancy change, as assessed using partial correlations. Although expectancy change from prefailure to postfailure was unrelated to attributions, expectancy change from postfailure to end of session was significantly and negatively correlated with the stability dimension, and marginally with the ability attribution, the global dimension, and the control dimension. Thus, there is some limited support for Weiner's theorizing, in that there is less recovery in expectancy if failure is attributed to a more stable cause. Yet, the relationships are small, the dimensions are not strongly differentiated in this respect and there were no significant relationships at all involving expectancy change from prefailure to postfailure.

The present study did not, then, provide strong support for recent theorizing in the area of attributions. The ratings of the broad dimensions of attributing are not orthogonal, and they do not relate to the dimensions derived from single causes in the way that would be predicted if children were analyzing the single causes according to their proposed underlying dimensions. Finally, the predicted expectancy change - stability relationships are minimal. Possible problems with the method used to assess attributions will be discussed below.

In general, relationships between the personality variables and attributional ratings were not strong. Test anxiety and global self-concept did show significant correlations with both the ability attribution and the global dimension, but these relationships are small. Conspicuously absent are attributional correlations with depression. In contrast to Seligman et al.'s (1984) recent finding of significant correlations between depression and each of the internal, global, and stable dimensions, there were no significant correlations in the present study with any specific, derived, or dimensional attribution rating, with the exception of a very marginal correlation with globality.

These findings of limited personality - attribution relationships contrast with the significant correlations between the personality variables and the IAR+ score, which represents internal attributions for positive events. Several explanations for this discrepancy are possible.

First, although single questions have commonly been used to assess subjects' attributions to different causal factors or along different causal dimensions, as Alloy (1982), among others, has pointed out, the reliability of such questions is not known. Generally, however, single item measures of a construct tend to be unreliable. The Children's Attributional Style Questionnaire (CASQ) used by Seligman et al., (1984) consists of 48 items, divided equally among good and bad events, and equally among the dimensions of internality, stability, and globality. Similarly, the IAR samples multiple situations and may therefore be a more reliable measure of attributional style. The IAR+ score was significantly correlated with the CDI, as well as the TASC and the Piets-Harris.

It also may be important to note that there were few significant correlations involving the IAR- score, which assesses attributions for negative or failure events. All of the single question attributional ratings elicited in the present study were explanations for failure performance. Although others (e.g., Seligman et al., 1984) have found significant correlations involving attributions for both good and bad events, it is possible, as some others have found (Ames, 1978; Ames & Felker) that relationships with personality variables are strongest for those attributions made to explain positive events. Possibly, stronger personality - attribution relationships would have been found even for single item attribution ratings, if attributions for successful performance were being measured.

Third, as many others have pointed out (e.g., Alloy, 1982; Nisbett & Wilson, 1977; Wortman & Dintzer 1978), people may not have "direct introspective access to their own cognitive processes" (Alloy, 1982, p. 462) or may not have that knowledge immediately available. If this is true for adults, one would expect that it would be true as well for children, who have a lower level of development of most metacognitive abilities (Scardamalia & Bereiter, 1983). Along the same line, Alloy (1982) suggests that it may take a certain amount of real information processing time to formulate an attribution concerning the cause of an event. Moore, Sherrod, Lui, and Underwood (1979), for example, found that subjects' attributions for their own behavior shifted away from situational causes, and toward dispositional causes as time passed. Subjects' initial attributions, as assessed by the single ratings in the present study, may reflect those causal factors that are most salient at the time of the experience,

whereas attributions assessed after a longer interval may more accurately reflect one's true beliefs about causality. Just as the relationships between the personality variables assessing test anxiety and depression and the performance ratings were strongest when these ratings were made at the end of the session, so the attribution - personality correlations may also have been stronger if attributions had also been assessed at this time.

Thus, the attributional measures in the present study may not have been the best way to assess causal attributions, although whatever was being measured was significantly correlated with the ratings of performance. This fact also warrants further consideration. An examination of the results of this study indicates that, in many instances, the strongest correlations existed within a set of variables that were collected by the same method and at the same time. For example, the personality measures were strongly intercorrelated, the performance ratings (including some causal attributions) were strongly intercorrelated, and the two teacher ratings correlated strongly. Correlations across "methods" were generally not as strong. The possibility exists, then, that the common variance that is apparent is a function of overlap among measures, rather than overlap among the characteristics or constructs that they purport to measure. Further research could tease apart these possibilities by including alternate ways of assessing the same variables, and similar measures of different variables and observing where the relationships are strongest (i.e., multitrait-multimethod matrix) (Campbell & Fiske, 1959).

7

Performance Change

The reformulated learned helplessness model stresses the importance of expectancies and attributions as intervening variables between an objective noncontingency and the behavioral deficits shown. Silver et al. (1982) have hypothesized that other types of cognitions, such as the performance ratings made in the present study, may mediate distress and helplessness following a failure outcome. Yet, in the present study, neither attributions nor the performance ratings related significantly either to actual performance or to performance decrements. This finding appears to be at odds with predictions arising both from previous research and from the theoretical literature, and deserves consideration.

One possible explanation of this lack of a relationship is that there are problems with the measures. As discussed above, the attributional ratings may not, in fact, have tapped causal attributions, or alternatively consistencies in the performance ratings may have simply been a result of a perceived public commitment to a standard of performance. The measure of performance decrement may also have been problematic. In an early paper, Maier and Seligman (1976), reviewing the literature with animals, reported that exposure to inescapable shock produces a deficit on some escape tasks but not on others. Although the issue does not appear to have received much attention since then, it may be that helplessness deficits, as defined by the theory, are not exhibited on a maze task. (Hanusa and Schulz (1977) used a maze task with adult subjects and failed to find learned helplessness effects). The relevance of the nature of the task will be discussed in greater detail below.

Alternatively, time taken to complete the mazes may not have been the best variable to use in assessing performance deficits. There is some evidence that performance changes following failure may be a result of changes in persistence (Janoff-Bulman & Brickman, 1982; McFarlin, Baumeister, & Blascovich, 1984). In the present study, the examiner sat across from the children at all times and did not really provide the children with any option other than continuing on the mazes until they were completed. Only a very small percentage of children did not continue with every maze until it was completed. Perhaps if the children had been provided expressly with a task on which they had the option to continue or not following failure, persistence on such a task may have related to the attributions or performance ratings in the manner predicted.

A problem with the maze task measure might account for the lack of consistency in behavioral deficits associated with failure that was found between the two sessions of the study. Yet, in fact, there was some limited consistency across sessions when residual gain scores were both assessed in the postfailure period, and the consistent personality measure - performance change correlations across the sessions also suggest that the residual gain score may have been measuring some reliable deficit in performance.

A second possibility, then, is that there was a reliable performance deficit shown on the maze task, but it was not necessarily as a result of a learned helplessness (see Silver et al., 1982). In fact, there may be several different factors accounting for performance decrements following failure. For example, Snyder, Smoller, Strenta, and Frankel (1981) found that egotism, referring to

a low exertion of effort in order to discount an attribution to poor ability, best accounted for performance deterioration in their study. Negativity, heightened anxiety, cognitive withdrawal, detection of the deception, and erroneous inferences about the task requirements all have been suggested as possible explanations, aside from learned helplessness, for performance decrements following failure (Silver et al., 1982; Snyder et al., 1981). One could hypothesize that these various explanations of behavioral deficits would show different patterns of relationships with the performance ratings, such that overall any relationship between these ratings and performance decrements would be washed out. Like Snyder et al.'s study, future research should be designed to separate out different types of reactions to failure (i.e., frustration, hostility, anxiety) and look for varying relationships between these and other measures such as the performance ratings collected in this study.

It might also be the case that the effects of failure upon performance are unrelated to cognitions such as those assessed in the present study. Although there is evidence and a general consensus supporting the contention that "on the whole...the results are rather consistent in indicating that the various expectancies, whether measured or manipulated, predict persistence and performance, particularly on difficult tasks and under evaluative pressure" (Dweck & Elliott, 1984, p. 658), not all research has, in fact, found significant cognition - performance relationships. Dweck and Repucci (1973), in their initial study of learned helplessness in children, found no group differences in either initial or final expectancies when group classification was made on the basis of performance deterioration

following failure. Weisz (1981), in his study of learned helplessness in retarded children, found that verbalization data, assumed to be representing underlying cognitions, shed little light on the task performance data. Medway and Venino (1982) found that children's own attributions were unrelated to task persistence, and Dimitoff et al., (1979) found that, following failure, only task difficulty (out of the standard set of four) attributions significantly correlated with task persistence for 5th graders, while there was no significant attribution-persistence correlations for the 7th grade students of their study.

Moreover, a series of studies reported in the Journal of Personality in 1982 (Oakes & Curtis, 1982; Tennen, Drum, Gillen, & Stanton, 1982; Tennen, Gillen, & Drum, 1982) failed to show any performance decrement - cognitive rating relationship in adults. As Oakes and Curtis (1982) explain, "behavioral decrement took place independently of the cognitions and other phenomenal experiences usually adduced to explain the effect" (p. 397). Performance deficits did occur with exposure to noncontingency, but there was no relationship between these decrements and awareness of contingency, attributions, affect, or perceived control.

Although some research with children has shown attribution - performance correlations (e.g., Rholes et al., 1980), it may be important to note that even in Dweck's research on learned helplessness in children, there is not clear evidence of a performance - cognition-link. For example, Dietrich and Dweck (1978, 1980) showed that both performance decrements and cognitions discriminated between their helpless and mastery-oriented groups, but there was no direct

examination of the relationship between performance decrements and cognitions. Similarly, in the present study depression was associated with a particular pattern of cognitions and performance decrements in the maze session, yet the cognitions and performance decrements themselves were unrelated.

On the other hand, it should be noted that the attributional data obtained from the IAR (both IAR+ and IAR- (ability) scales) were predictive of performance deterioration following failure. Thus, although the specific attributional data obtained during the session did not relate to performance change in the way that would be predicted by a helplessness theory, a more global measure of attributional style did. Shrauger and Sorman (1977) similarly found that in adults, generalized self-evaluative tendencies have some impact on behavior even when they are independent of situation - specific performance evaluations. Moreland and Sweeney (1984) found that when self-esteem affected university students' reactions to their performance evaluations, it was general rather than task - specific self-esteem that was important. Alloy (1982) has also reported that general attributional style tends to predict helpless behavioral deficits better than situation-specific attributions.

Underlying Processes

The residuals from the CPT session provided some illustrative data regarding the processes underlying the deterioration in performance. Like Diener and Dweck's (1978, 1980) studies, this study also found a relative decrease in accuracy of performance with increasing failure. The tapering off in performance differences at Trial 6 brings up the possibility that failure may not have a negative

effect upon everyone's performance at the same point in time. It may be the point at which failure shows this effect, representing how much failure can be tolerated, that is one important individual difference variable. Such an hypothesis is in line with Roth's (e.g., Roth & Bootzin, 1974; Roth & Kubal, 1975) proposal of a curvilinear relationship between the amount of exposure to noncontingency and learned helplessness. Roth proposed that a moderate degree of exposure will lead to a greater degree of responding or facilitation effects, whereas more exposure will result in deficits due to learned helplessness. The important individual difference factor may be the point along this continuum at which any individual enters the situation, determining whether facilitation or deficits will occur initially, presumably due to the way in which the noncontingency or failure is perceived. Some children, for example, may perceive any amount of failure as excessive and react to that with helplessness-like performance deficits, whereas others may show facilitated performance until failure is perceived to be excessive. Diener and Dweck (1978) concluded that their mastery-oriented group responded to failure feedback as information leading to problem solution, rather than as failure or as a prediction of future failure. Diener and Dweck had four failure trials, as did the present study. There must come a point in time when failure feedback can no longer be accepted as such valuable information. Janoff-Bulman and Brickman (1982) point out that it is more valuable to be able to discriminate whether continued persistence may or may not lead to success than it is to have a general tendency to persist. It would be maladaptive for an individual attempting to solve a problem to not, at some point,

recognize ongoing and continued failure for what it is (McFarlin et al., 1984). In the present study, this seemed to be beginning amongst the group not initially disrupted by the failure by the fourth failure trial. (If failure was beginning to adversely affect everyone's performance by the fourth failure trial, this would account for the fact that the CPT results were clearest when residual gain was calculated utilizing the third failure trial.) Further examination of individual differences in children in the amount of failure that can be tolerated before negative effects upon performance occur may provide some interesting areas for future research.

Although performance disruption was defined on the basis of the residual gain score, an examination of actual performance across trials indicated that the group with the largest residual gain scores actually had maintained the level of their performance across failure trials, whereas that group with the smallest residual gain scores was showing improvement in their performance. The important result may be, then, that some children rise to the challenge when failures are encountered and their performance improves, whereas other children are not able to do so. This finding, in some ways, is analogous to Kramer and Rosellini's (1984) finding that their contingent group showed facilitated performance relative to their non-contingent and control groups, that did not differ. Although the aim of the present study was to examine individual differences in childrens' responding when they are exposed to the same failure experience, the inclusion of a control group, not receiving failure, in a study such as this one, would help clarify what the actual effects of the failure were. For example, it would be possible to determine whether, in the absence of

failure, the performance of most children remains constant or gradually improves, and, therefore, to determine whether the important effect of failure is facilitation of performance in some children, or disruption of performance in others.

Larger residuals for the maze session were associated with more drawing errors and blind alleys, whereas for the CPT session they were associated, especially for errors of commission, with a faster response latency. In neither case, then, was there any evidence that the performance decrement is associated with a more cautious, problem-solving style.

In 1979, Plass and Hill examined the rate and accuracy of responding of children varying in level of test anxiety under standard testing conditions. They identified a group of children, high in anxiety, who showed an excessively fast response rate that resulted in poor performance. This subgroup may be similar to the finding in the present study of a faster response latency among those children who showed the greatest increase in errors during failure trials on the CPT task. (This fast response latency occurred only amongst the group showing an increase in errors of commission, and not amongst those showing an increase in errors of omission). Another group identified by Plass and Hill, who were also moderate to high in self-reported anxiety, showed slow, overly cautious responding, which gained them only moderate accuracy on the performance task. This slower response mode, in the CPT session, could have resulted in a pattern of errors of omission. Given the significant anxiety - depression correlation found throughout the literature, Plass and Hill's group of test anxious children may have been depressed as well.

The CPT session also provided a nice illustration of the distinction between anxiety and depression. Although anxiety and depression were associated with a similar pattern of responding, as assessed by the performance ratings of the maze session, the performance disruption evidenced on the CPT session took different forms. Anxiety, and particularly the negative self-evaluation associated with anxiety, was associated with an increased incidence of errors of commission during CPT failure trials. Depression, on the other hand, was associated with an increased incidence of errors of omission during the CPT failure trials.

Garber, Miller, and Abramson (1980) have discussed the considerable overlap between the two syndromes of anxiety and depression with respect to manifest symptomatology and hypothesized etiology. Some authors believe that depression and anxiety can be classified together as affective states, whereas others support differentiation of the two (McDougall & Brown, 1984). Garber et al. conclude that it is possible to reliably discriminate between the two syndromes on the basis of certain clinical symptom patterns. Of relevance to the CPT findings of the present study, after reviewing the literature, Garber et al. concluded that depression tends to have a de-energizing effect upon behavior, leading to lowered activity, psychomotor retardation and a lack of response initiation, whereas anxiety is associated with increased activity and agitation. They cautioned that "care must be taken to distinguish between behavioral disruption due to anxiety-generated disorganization and that due to depression-generated passivity" (p. 141). The CPT task was able, quite neatly, to illustrate this distinction.

The results from the CPT session also highlight the possible importance of the nature of the task in results that will be obtained from studies of this sort. Silver et al. (1982) have concluded that "the type of tasks employed in the training and test phases of laboratory experiments...may be an important determinant of whether performance decrements or facilitation effects occur" (p. 490). They report, for example, that subjects may infer from the training phase of a learned helplessness study that tasks are difficult and require complicated solutions. If the test task, in fact, requires simple answers, a subjects' tendency to seek complex solutions will result in performance decrements. In contrast, if the test task does require complicated solutions, one might expect facilitated performance. Along this same line, a recent study by Traub and May (1983) found that, among a group of female university students, false failure feedback lead to performance decrement on a cognitive arithmetic task, whereas the same feedback resulted in improved performance on a biofeedback relaxation task. The authors explained the result by hypothesizing that the failure resulted in a "giving up" or reduction in effort in the subjects, which has negative consequences for performing arithmetic tasks, but is facilitative of performance on a biofeedback task.

The present study points up the possible importance of also adding an individual differences component into this analysis. For example, if behavioral activation is conducive to adequate performance on the postfailure task, no performance deterioration may be exhibited by the test anxious, whose behavior appears to be activated by failure. In fact, such behavioral activation may have allowed for

adequate performance, in terms of time to complete the postfailure mazes, among the more highly test anxious children in this study. (Yet, a tendency to show an increase in drawing errors among the group of more highly test anxious children may represent some evidence of behavioral disorganization). On the other hand, if decreased response initiation was in some way facilitative on a task (e.g., a test of reflectivity-impulsivity, perhaps), the more highly depressed might exhibit no performance deterioration. The CPT task, however, could separate these alternatives, and, therefore, provide evidence of the different types of performance deterioration in the two groups. To date, there has been little acknowledgement of the role of the task in studying response to failure. Further investigation of task-related effects would appear warranted in light of the present findings.

Consistency Across Sessions

A further goal of the present investigation was to examine whether there was consistency in the manner in which individuals respond to failure experiences across tasks, with particular regard to the performance decrement. There was no correlation between the maze session residuals and the CPT residuals. It is possible that the one to two month lag between sessions may have attenuated the strength of the relationship (although a response style that is not consistent over a period of one to two months is not a strong phenomenon).

It was also noted, however, that maze residuals were based upon postfailure performance whereas the CPT residuals were based upon performance while failure was ongoing. There is some evidence of

consistency at the individual level when residuals from both sessions were based upon postfailure performance. Residuals based upon blind alley entrances on the maze task related marginally to residuals based upon errors of commission on the CPT, whereas residuals based upon time taken to complete the mazes relate significantly to errors of omission on the CPT. These relationships make intuitive sense.

Behavioral activation would be associated with both errors of commission and blind alley entrances, whereas behavioral suppression would be associated with errors of omission, and taking longer to complete the mazes. The relationships were very small, however, and the issue of consistency deserves further study. The distinction between failure and postfailure residuals should be kept in mind.

Learned helplessness, as originally conceived, is an overgeneralization phenomenon, in which the effects of the perceived noncontingency or failure are carried maladaptively beyond the actual situation to which they apply. As such, only the postfailure residuals of the present study even approximate this generalization effect. Yet others (e.g., Diener & Dweck, 1978, 1980; Weisz, 1981) have utilized performance deterioration during failure as an indication of learned helplessness. The results of the present study suggest that, although failure and postfailure residuals are significantly correlated, they may, in fact, tap different things, as they show different patterns of relationship across sessions.

In addition to this very limited evidence of consistency at the individual level, there is also some evidence of consistency at a group level. For both tasks, the strongest correlations with residuals involve the IAR+ score. If group classification is made on the basis

of a tertiary split on the IAR+ scores, the extreme two groups differ significantly with respect to the size of both the maze residuals and the CPT residuals. In other words, regardless of the task, children who showed the greatest deterioration in performance following failure were more likely to come from that group of children who do not take internal responsibility for positive outcomes, as assessed by the IAR, than from the group who do take such credit.

In general, however, the present study did not provide much evidence in support of a consistent pattern of responding to failure across tasks. As discussed above, some of this may be attributed to the different nature of the tasks, and different requirements for adequate performance. Although difficult to accomplish, because of generalization effects from session to session, an examination of whether there is stability in the pattern of responding when the same task is utilized at different times may better answer the question.

School Measures

The final set of findings to be discussed relate to the school measures and the possible relevance of these laboratory results to behavior observed within the classroom. Looking first at the personality measures, all, with the exception of global self-concept, were strongly related to grades in school. Consistent with the other results of the study, the IAR+ scale showed a much stronger relationship to grades than the IAR- scale.

Teacher ratings of both test anxiety and the tendency to give up when faced with failure were strongly related to each other, and to grades. They were also related to self-reported test anxiety, and to the IAR+ scale, though not as strongly as grades were. With

respect to test anxiety, teacher ratings correlated most strongly with the remote school concerns subscale, although the definition that the teachers relied upon emphasized anxiety and its interfering effects upon performance. Since teachers would not be expected to be aware of children's concerns about school while away from school, there must be some other aspect associated with remote school concerns to which the teachers are responding.

With respect to the measures obtained during the session, there was limited correspondence with the school measures. Reported cognitive interference correlated significantly with both grades and teacher ratings. CPT performance correlated with grades and teacher ratings. The residual based upon drawing errors on the mazes, as well as the CPT residuals (for total errors and errors of commission) negatively related to school grades, though not to teacher ratings. The children's own ratings of performance did not correlate with either school grades nor teacher ratings.

Contrary to Dweck's findings, those children whose performance became most disrupted following the failure did not perform as well in school or prior to the failure as did children who showed less disruption. Although the focus of the study was on performance deterioration, regardless of initial prefailure level, when prefailure level is examined, more disruption is apparent for those children with the lowest initial skill level. This finding is significant in that it suggests that, in achievement situations, certain children have two big strikes against them. Not only do some children enter the situation showing a lower level of performance, but these same children are not able to maintain even that level once failures or difficulties have

been encountered. Although this finding is in contrast to Dweck's conclusion, many of Dweck's measures relied upon very broad indices of prefailure performance (e.g., number of hints needed) which may not have been sensitive measures of initial performance level. In addition, in other studies (e.g., Dweck & Repucci, 1973) change scores were used. As discussed above, change scores appear to be greatest for those with the best initial performance. This statistical artifact may have wiped out the effects of any prefailure discrepancies.

The teacher ratings were included to provide an indication of the ecological validity of the laboratory results. They provide little evidence that the behaviors exhibited during the experimental sessions were related to behaviors observed by the teacher within the classroom. As such, one might question how relevant the laboratory tasks were (or were perceived by the children to be) to the tasks children normally encounter within the classroom. Perhaps tasks that seemed less game-like, and more academic, would have provided greater correspondence with the school measures. One might also question, however, what teachers are able to observe within the classroom. Generally, correlations between teacher ratings and direct observations are in the low to low-moderate range (Kazdin, Esveltd-Dawson, & Loar, 1983). Kazdin et al. (1983) found that rater - observer correlations were consistently higher than teacher - observer correlations for checklist ratings and estimates of overt behavior. Although teachers see a broad sample of performance, their classroom responsibilities may limit their ability to focus on the concrete behavior of a particular child. Without this concrete evidence upon

which to base a judgement, teachers may rely upon the information that is available to them -- academic grades. Marsh, Parker, and Smith (1983) found that teachers rely quite heavily upon their judgements of a students' academic ability in forming their impressions of student academic self-concept. Possibly, the teachers in the present study made similar reliance upon academic ability in forming judgements of test anxiety and tendency to give up when failing. Certainly, the correlation between teacher rating and child rating of test anxiety, though significant, was relatively small, and less than that between teacher rating of test anxiety and school grades. Perhaps a better measure of classroom behavior could be obtained using classroom observers, rather than teachers, as raters.

Summary and Conclusions

The major purpose of the present investigation was to examine individual differences in the ways in which children respond in achievement situations involving failure, and to explore some of the correlates of these individual differences. Consistent with this emphasis, and with the results of previous research, individual differences were evident across a wide variety of variables. Although presented with the same objective stimulus situation, there was great variation in the manner in which the children perceived this situation and their own performance within it. There were also individual differences in the manner in which the failure experiences affected a child's performance.

Looking first at the ratings that the children made during the maze session, representing their enjoyment of the task, evaluation of and overall satisfaction with performance, future expectancies about

maze performance, self-blame for failure, and interfering cognitions, it was found that these variables intercorrelated significantly across all time periods of the maze session. Although this cluster of variables fits in with the set proposed by Dweck and Wortman (1982) as characteristic of their construct of maladaptive responding, an important finding in the present study was that the children appeared to enter the experimental situation with a more or less positive response set concerning the task and their performance, and to maintain their relative level of this set across the entire session. It did not, then, appear to represent a response to the failure, per se, but to being in the maze session itself. As discussed above, it was not possible in the present study to determine the underlying basis for this obvious consistency in ratings across the entire maze session, but it is clear that there are strong individual differences in the ways in which children perceive their performance in an achievement situation that have little to do with the objective performance itself.

The causal attributional ratings, in contrast, were specifically related to the failure experience. Several indices of causal attributions were obtained -- single causes, dimensions derived from the single causes, and ratings of dimensions -- and it was found that the dimensions derived from single causes were not equivalent to those obtained directly from ratings. Further research on attributions in children must be cognizant of the fact that children do not necessarily analyze single causes according to the dimensions that researchers may assume to underly them. The strongest pattern of correlations between attributions and the performance ratings involved the ability attribution. These correlations were significant for each

of the prefailure, postfailure, and end of session periods. Two other single causes, agent of evaluation and lack of motivation, which have not often been included in research with children also showed patterns of significant correlations with the performance ratings, as did many of the measures used to represent causal dimensions.

The residual gain scores which were used as the measures of performance change following failure also, by definition, represented a response to the failure presented. In contrast to predictions arising from past research and from relevant theory, this measure of performance change following failure was unrelated to any of the children's ratings of performance or causal attributions for the failure made during the maze session. Since such cognitions have often been hypothesized to be explanations for the performance deterioration, the absence of any relationship between the two is a significant finding that merits further attention. It may be that there were problems with the measure of performance change, problems with the ways in which attributions or other cognitions about performance were measured, or it may be that performance change and these other variables are unrelated and there are other factors accounting for the performance change.

The residual gain scores obtained during the CPT session provided further evidence of individual differences. Not only were there individual differences in the amount of performance change during the failure trial, but there were also individual differences in the manner in which performance deteriorated when such change did occur. For some children whose performance was adversely affected, responding appeared to decrease during failure trials as errors of

omission showed a relative increase. For other children whose performance deteriorated, however, failure appeared to have an activating but disorienting effect with a relative increase in errors of commission.

A further set of important individual difference variables included in the present study were the personality variables, assessing test anxiety, depression, self concept, and locus of control. It was found that these variables showed a significant pattern of intercorrelations. The overlap among groupings of children classified as high, medium, or low on each of these variables would account for the similarities in research findings across these areas, and is an important factor to be acknowledged in research designed to test theoretical predictions in any one of the areas.

The personality variables also showed significant patterns of correlations with many of the measures derived during the testing sessions. The locus of control scores (internal responsibility for success, and ability attributions for failure) correlated with the residual gain scores, as measures of performance change. Children who were more likely to blame ability for failures occurring in an achievement setting and/or those who were least likely to assume internal responsibility for achievement successes (on a paper and pencil test using hypothetical situations) showed the largest residual gain scores, indicating the greatest amount of performance deterioration.

Test anxiety, depression, and level of self-concept were also related to residual gain scores, though not to the same extent as the locus of control measures. The residual gain scores from the CPT

session also provided a neat illustration of an important difference between the phenomena of test anxiety and depression. Test anxiety was associated with an increase in errors of commission, suggestive of the anxiety-activated disorientation explanation of performance difficulties recently proposed in the test anxiety literature.

Depression, on the other hand, was associated with an increase in errors of omission, suggesting that the failure had a de-energizing effect upon performance, consistent with a "giving up response" as would be predicted by a learned helplessness explanation of performance deterioration. The ability of the CPT task to distinguish between these two response styles highlights the importance of the nature of the task in studies of this type. This is a variable that has thusfar been neglected.

The differences between the maze and the CPT tasks may also account for the lack of consistency in the behavioral response to the failure across the two sessions of the study. There was only very minimal evidence in the present study that an individual child would show a similar level of performance deterioration following failure on the two tasks. It was noted, though, that across both tasks, those children whose performance showed most deterioration on both tasks, as defined, were more likely to be among that group of children who were least likely to assume credit for achievement successes, as measured by the IAR.

The personality variables, particularly test anxiety and depression, also showed a pattern of relationships with the ratings made by the children during the maze session. Test anxiety and depression were associated with less task enjoyment and more negative

ratings of performance throughout the maze session, but particularly during the end of session period. It appeared that children who were more highly test anxious or depressed were less able to "let go" of the failure trials of the session and incorporate them realistically within the total picture of performance on the maze task.

The study, then, provided data on some of the similarities and differences among children of differing levels of test anxiety, depression, self-concept, and locus of control. Locus of control measures were the most strongly related to performance change associated with failure but were unrelated to performance ratings. Self-concept was also minimally related to performance change, but only showed significant correlations with a few of the performance ratings made prior to any failure. Both the test anxiety and depression measures were related to performance ratings and performance change in theoretically relevant ways. Both of the measures showed a similar pattern of more negative performance ratings following failures extending beyond the time period when such ratings were appropriate. (Although the patterns were similar, test anxiety was more strongly associated with cognitive interference and comparative evaluation, whereas depression was more strongly associated with evaluation and future expectancies). Both of the measures also were associated with an increase in errors during failure on the CPT session (test anxiety wasn't associated with such an increase on the maze task, possibly because of the task requirements), but the errors were of a different sort. Depressed children respond with errors of omission, consistent with a retarded initiation of responding, whereas test anxious children respond with errors of

commission, consistent with anxiety-induced disorganization.

Finally, the study provided an opportunity to investigate the relationship between behavior observed during the experimental sessions and behavior observed by teachers within the classroom. The strongest relationships were those involving the child's average school grade. Grades, which were correlated with each of test anxiety, depression, and locus of control for achievement successes, also showed significant relationships with the residual gain scores for total errors and errors of commission on the CPT (and a marginal relationship with the residual for drawing errors on the mazes). Unlike findings from previous research, then, this study found that children whose performance deteriorated most during failure did not generally do as well in school and, in fact, were doing more poorly on the tasks themselves even prior to any failure. Of the performance ratings made by the children, only the measure of cognitive interference was significantly correlated with school grades.

Teachers had also made ratings of test anxiety and the tendency to give up when faced with failure. Teachers saw these two characteristics as being highly correlated with school grades. Though correlated with CPT performance, the teacher ratings were not correlated with the other measures obtained during the study, with the exception of small correlations with the measure of cognitive interference. The behaviors of interest during the sessions, then, were unrelated to behaviors that teachers perceive within the classroom, leading one to question the ecological validity of the data observed in this study. It was suggested, however, that teachers may not be the best observers of behavior within the classroom, because of

their focus and emphasis on performance and achievement. Whether a greater concordance between in-class and laboratory behavior would be found if outside observers were introduced into the classroom remains to be investigated.

The present study was exploratory in nature, designed to examine patterns of relationships among a large number of variables, rather than to provide clearcut answers to specific questions. It brought together within a single study a set of variables in order to empirically investigate relationships that were suggested by previous findings, but that had not been directly examined previously. It focused specifically upon a sample of school-aged children for whom achievement-related issues are very relevant, but who have received limited research attention. A number of findings from the adult literature were confirmed among this group of children.

Several methodological issues were discussed and should be considered in designing future research studies in this area. Although the present study allowed for an examination of the differential effects of failure upon children's performance and ratings about performance, it did not allow for an examination of what it is about the failure that produced the effects, nor did it allow for an examination of how the failure affected performance, because there was no non-failure control group. The use of experimental tasks that would help discriminate among various reactions to the failure, and the inclusion of a non-failure comparison group, would allow for a determination of how and why failure produces differential effects among children. There also appears to be a need for the use of more reliable and valid measures in future studies. In the present study,

many of the dependent measures were single ratings, and most were collected by a single method (7 - point ratings made during a single session). Assessing dependent variables with multiple - item measures, and utilizing varying methods to obtain the dependent variables should be considered. Finally, the present study was exploratory, and in order to fully explore patterns of relationships, a relatively lenient alpha level was adopted for tests of statistical significance. Future research should adopt a more stringent level in order to confirm the existence of relationships suggested by the present study.

This study and its results do not provide a neat package of conclusions. In general, the observed relationships, even when statistically significant, were very small. Although similarly small relationships are not uncommon in research of this sort (e.g., see McMahan, 1973; Nicholls, 1976; Tesiny et al., 1980), it is the patterns of relationships, rather than any particular finding, that must be considered the important results deriving from the present study. As discussed, these patterns confirmed some of the predictions arising from previous research and disconfirmed others. They highlighted relevant variables that have not previously been considered. The study has pointed the way for further important enquiries into this area of individual difference variables that affect children's performance in difficult or challenging achievement situations.

FOOTNOTE

¹Sex differences are commonly found in the relevant literature in this area. Although sex differences were not examined within this study, the raw data is available from the author to be analyzed for sex differences.

APPENDIX A

Letter of Consent to Parents



The University of Western Ontario

Faculty of Social Science
Department of Psychology
London, Canada N6A 5C2

Dear Parents,

I am a graduate student in the Psychology Department of the University of Western Ontario, doing my doctoral research under the supervision of Dr. I. H. Gotlib, a professor in the department. I am conducting a study that will look at some of the factors that influence children's performance on academic and achievement-related tests. Children receive many experiences, both success and failure, in the course of their school and extra-curricular activities. Past research has shown that children differ in the way that they respond to these successes and failures. For example, some children are not bothered by failure, and, following both success and failure, they are able to perform to the best of their abilities on other tasks that they try. Other children, however, let failure interfere with their later performance. Following a failure, they become confused, or give up, and therefore do not do as well as they can. Since some amount of failure is an inevitable part of any child's experiences at school, a better understanding of these differing responses of children will provide important information for parents, educators and other practitioners who work with children. The purpose of this study, then, is to further explore these different responses of children, and to look for those factors that differentiate between children who are and those who are not able to maintain adequate performance following an experience with failure.

Children will be seen on three occasions, each lasting approximately 45 to 60 minutes, over the course of two to three months. During these sessions, the children will be involved in filling out questionnaires, solving problems and answering questions about their perceptions of their performance. Although the children will not be aware of this fact, the testing situation will include a small number of problems which they will not be able to solve (as is common with many tasks encountered), in order that I may study the variables of interest to me. I will ensure, however, that each child will leave the sessions with experiences of success and praise concerning his or her performance. Furthermore, the children will be informed that they can withdraw from any session at any time, if they so wish.

In addition, in order to determine whether performance in this study relates to actual behaviour in the classroom, your child's teacher, as the most knowledgeable source of such information, will be asked to give some general impressions concerning his or her students' reactions to failure.

The information collected in the study is for research purposes only. If your child is included in the study, no individual record of the research results will be published or seen by any school personnel. The data will be analyzed by groups, so that no individual child's performance will actually be studied.

This research has been reviewed and approved by the London Board of Education and the principal of your child's school. The final decision regarding the participation of each child must be made by the individual parent. Your cooperation in permitting your child to participate in this research would be greatly appreciated.

In addition to the measures obtained directly from the children and their teachers, an indication of your child's past school performance would also provide useful information for the purposes of examining the relationship between response to failure and school performance. You can also indicate on the consent form whether I may obtain such information from the school records. Please be aware, however, that you may allow your child to participate in the study without allowing me to obtain this additional information.

Please return the consent form to the school as soon as possible. I would appreciate receiving an answer even if you do not wish your child to participate, since I would like to be certain that all parents have, in fact, received this request. If you have any questions about the study, or if you would like to examine a copy of the materials to be used in the study, please feel free to contact me at 471-3833.

Yours truly,-

Rhonda Gilby

Rhonda Gilby, M.A.

Department of Psychology

CONSENT FORM

Rhonda Gilby:

☐ My child may participate in the study.

☐ My child may not participate in the study.

☐ You may obtain information about my child from school records.

☐ You may not obtain information about my child from school records.

Name of child _____

Grade _____ Teacher _____

Date of birth _____

(Signature)

(Date)

APPENDIX B

Test Anxiety Scale for Children

- | | | | |
|-----|--|-----|--|
| 1. | Do you worry when the teacher says that he or she is going to ask you questions to find out how much you know? (TA) | YES | NO |
| 2. | Do you worry about being promoted, that is, passing from grade to grade at the end of the year? (TA) | YES | NO |
| 3. | When the teacher asks you to get up in front of the class and read aloud, are you afraid that you are going to make some bad mistakes? (TA) | YES | <input checked="" type="checkbox"/> NO |
| 4. | When the teacher says that he or she is going to call upon some boys and girls in the class to do arithmetic problems, do you hope that he or she will call upon someone else and not on you? (CPSE) | YES | NO |
| 5. | Do you sometimes dream at night that you are in school and cannot answer the teacher's question? (RSC) | YES | NO |
| 6. | When the teacher says that he or she is going to find out how much you have learned, does your heart begin to beat faster? (SS) | YES | NO |
| 7. | When the teacher is teaching you about arithmetic, do you feel that other children in the class understand him or her better than you? (CPSE) | YES | NO |
| 8. | When you are in bed at night, do you sometimes worry about how you are going to do in class the next day? (RSC) | YES | NO |
| 9. | When the teacher asks you to write on the blackboard in front of the class, does the hand you write with sometimes shake a little? (SS) | YES | NO |
| 10. | When the teacher is teaching you about reading, do you feel that other children in the class understand him or her better than you? (CPSE) | YES | NO |
| 11. | Do you think you worry more about school than other children? (TA) | YES | NO |
| 12. | When you are at home and you are thinking about your arithmetic lesson for the next day, do you become afraid that you will get the answers wrong when the teacher calls upon you? (RSC) | YES | NO |

- | | | | |
|-----|---|-----|----|
| 13. | If you are sick and miss school, do you worry that you will do more poorly in your schoolwork than other children when you return to school? (CPSE) | YES | NO |
| 14. | Do you sometimes dream at night that other boys and girls in your class can do things that you cannot do? (CPSE) | YES | NO |
| 15. | When you are at home and you are thinking about your reading lesson for the next day, do you worry that you will do poorly on the lesson? (RSC) | YES | NO |
| 16. | When the teacher says that he or she is going to find out how much you have learned, do you get a funny feeling in your stomach? (SS) | YES | NO |
| 17. | If you did very poorly when the teacher called on you, would you probably feel like crying even though you would try not to cry? (SS) | YES | NO |
| 18. | Do you sometimes dream at night that the teacher is angry because you do not know your lessons? (RSC) | YES | NO |
| 19. | Are you afraid of school tests? (TA) | YES | NO |
| 20. | Do you worry a lot <u>before</u> you take a test? (TA) | YES | NO |
| 21. | Do you worry a lot <u>while</u> you are taking a test? (TA) | YES | NO |
| 22. | <u>After</u> you have taken a test do you worry about how well you did on the test? (TA) | YES | NO |
| 23. | Do you sometimes dream at night that you did poorly on a test you had in school that day? (RSC) | YES | NO |
| 24. | When you are taking a test, does the hand you write with shake a little? (SS) | YES | NO |
| 25. | When the teacher says that he or she is going to give the class a test, do you become afraid that you will do poorly? (TA) | YES | NO |
| 26. | When you are taking a hard test, do you forget some things you knew very well before you started taking the test? (TA) | YES | NO |

- | | | | |
|-----|---|-----|----|
| 27. | Do you wish a lot of times that you didn't worry so much about tests? (TA) | YES | NO |
| 28. | When the teacher says that he or she is going to give the class a test, do you get a nervous or funny feeling? (SS) | YES | NO |
| 29. | While you are taking a test do you usually think you are doing poorly? (TA) | YES | NO |
| 30. | While you are on your way to school, do you sometimes worry that the teacher may give the class a test? (TA) | YES | NO |
-

TA refers to items used to represent the test anxiety factor.

SS refers to items used to represent the somatic signs factor.

CPSE refers to items used to represent the comparative poor self evaluation factor.

RSC refers to items used to represent the remote school concerns factor.

APPENDIX C
Children's Depression Inventory

Pick out the sentences that describe your feelings and ideas in the PAST TWO WEEKS.

1. ___ I am sad once in a while.
 ___ I am sad many times.
 ___ I am sad all the time.
2. ___ Nothing will ever work out for me.
 ___ I am not sure if things will work out for me.
 ___ Things will work out for me O.K.
3. ___ I do most things O.K.
 ___ I do many things wrong.
 ___ I do everything wrong.
4. ___ I have fun in many things.
 ___ I have fun in some things.
 ___ Nothing is fun at all.
5. ___ I am bad all the time.
 ___ I am bad many times.
 ___ I am bad once in a while.
6. ___ I think about bad things happening to me once in a while.
 ___ I worry that bad things will happen to me.
 ___ I am sure that terrible things will happen to me.
7. ___ I hate myself.
 ___ I do not like myself.
 ___ I like myself.
8. ___ All bad things are my fault.
 ___ Many bad things are my fault.
 ___ Bad things are not usually my fault.
9. ___ I feel like crying everyday.
 ___ I feel like crying many days.
 ___ I feel like crying once in a while.
10. ___ Things bother me all the time.
 ___ Things bother me many times.
 ___ Things bother me once in a while.
11. ___ I like being with people.
 ___ I do not like being with people many times.
 ___ I do not want to be with people at all.
12. ___ I cannot make up my mind about things.
 ___ It is hard to make up my mind about things.
 ___ I make up my mind about things easily.
13. ___ I look O.K.
 ___ There are some bad things about my looks.
 ___ I look ugly.

14. --- I have to push myself all the time to do my schoolwork.
--- I have to push myself many times to do my schoolwork.
--- Doing schoolwork is not a big problem.
15. --- I have trouble sleeping every night.
--- I have trouble sleeping many nights.
--- I sleep pretty well.
16. --- I am tired once in a while.
--- I am tired many days.
--- I am tired all the time.
17. --- Most days I do not feel like eating.
--- Many days I do not feel like eating.
--- I eat pretty well.
18. --- I do not worry about aches and pains.
--- I worry about aches and pains many times.
--- I worry about aches and pains all the time.
19. --- I do not feel alone.
--- I feel alone many times.
--- I feel alone all the time.
20. --- I never have fun at school.
--- I have fun at school only once in a while.
--- I have fun at school many times.
21. --- I have plenty of friends.
--- I have some friends but I wish I had more.
--- I do not have any friends.
22. --- My schoolwork is alright.
--- My schoolwork is not as good as before.
--- I do very badly in subjects I used to be good in.
23. --- I can never be as good as other kids.
--- I can be as good as other kids if I want to.
--- I am just as good as other kids.
24. --- Nobody really loves me.
--- I am not sure if anybody loves me.
--- I am sure that somebody loves me.
25. --- I usually do what I am told.
--- I do not do what I am told most times.
--- I never do what I am told.
26. --- I get along with people.
--- I get into fights many times.
--- I get into fights all the time.

APPENDIX D

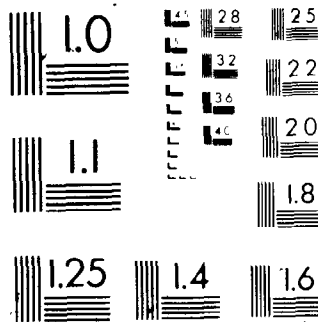
Intellectual Achievement Responsibility Scale

3

OF/DE

3

MICROCOPY RESOLUTION TEST CHART
NBS 1010a
ANSI and ISO TEST CHART No. 2



1. If a teacher passes you to the next grade, would it probably be
___ a. because he or she liked you, or
___ b. because of the work you did?
2. When you do well on a test at school, is it more likely to be
___ a. because you studied for it, or
___ b. because the test was especially easy?
3. When you have trouble understanding something in school, is it usually
___ a. because the teacher didn't explain it clearly, or
___ b. because you didn't listen carefully?
4. When you read a story and can't remember much of it, is it usually
___ a. because the story wasn't well written, or
___ b. because you weren't interested in the story?
5. Suppose your parents say you are doing well in school. Is this likely to happen
___ a. because your school work is good, or
___ b. because they are in a good mood?
6. Suppose you did better than usual in a subject at school. Would it probably happen
___ a. because you tried harder, or
___ b. because someone helped you?
7. When you lose at a game of cards or checkers, does it usually happen
___ a. because the other player is good at the game, or
___ b. because you don't play well?
8. Suppose a person doesn't think you are very bright or clever.
___ a. Can you make him or her change his or her mind if you try to, or
___ b. are there some people who will think you're not very bright no matter what you do?
9. If you solve a puzzle quickly, is it
___ a. because it wasn't a very hard puzzle, or
___ b. because you worked on it carefully?
10. If a boy or girl tells you that you are dumb, is it more likely that they say that
___ a. because they are mad at you, or
___ b. because what you did really wasn't very bright?
11. Suppose you study to become a teacher, scientist or doctor and you fail. Do you think this would happen
___ a. because you didn't work hard enough, or
___ b. because you needed some help, and other people didn't give it to you?

12. When you learn something quickly in school, is it usually
___ a. because you paid close attention, or
___ b. because the teacher explained it clearly?
13. If a teacher says to you, "your work is fine", is it
___ a. something teachers usually say to encourage pupils, or
___ b. because you did a good job?
14. When you find it hard to work arithmetic or math problems at school, is it
___ a. because you didn't study well enough before you tried them, or
___ b. because the teacher gave problems that were too hard?
15. When you forget something you heard in class, is it
___ a. because the teacher didn't explain it very well, or
___ b. because you didn't try very hard to remember?
16. Suppose you weren't sure about the answer to a question your teacher asked you, but your answer turned out to be right. Is it likely to happen
___ a. because he or she wasn't as particular as usual, or
___ b. because you gave the best answer you could think of?
17. When you read a story and remember most of it, is it usually
___ a. because you were interested in the story, or
___ b. because the story was well written?
18. If your parents tell you you're acting silly and not thinking clearly, is it more likely to be
___ a. because of something you did, or
___ b. because they happen to be feeling cranky?
19. When you don't do well on a test at school, is it
___ a. because the test was especially hard, or
___ b. because you didn't study for it?
20. When you win at a game of cards or checkers, does it happen
___ a. because you play real well, or
___ b. because the other person doesn't play well?
21. If people think you're bright or clever, is it
___ a. because they happen to like you, or
___ b. because you usually act that way?
22. If a teacher didn't pass you to the next grade, would it probably be
___ a. because he or she "had it in for you", or
___ b. because your school work wasn't good enough?
23. Suppose you don't do as well as usual in a subject at school. Would this probably happen
___ a. because you weren't as careful as usual, or because
___ b. somebody bothered you and kept you from working?

24. If a boy or girl tells you that you are bright, is it usually
--- a. because you thought up a good idea, or
--- b. because they like you?
25. Suppose you became a famous teacher, scientist or doctor. Do you think this would happen
--- a. because other people helped you when you needed it, or
--- b. because you worked very hard?
26. Suppose your parents say you aren't doing well in your schoolwork. Is this likely to happen more
--- a. because your work isn't very good, or
--- b. because they are feeling cranky?
27. Suppose you are showing a friend how to play a game and he or she has trouble with it. Would that happen
--- a. because he or she wasn't able to understand how to play, or
--- b. because you couldn't explain it well?
28. When you find it easy to work arithmetic or math problems at school, is it usually
--- a. because the teacher gave you especially easy problems, or
--- b. because you studied well before you tried them?
29. When you remember something you heard in class, is it usually
--- a. because you tried hard to remember, or
--- b. because the teacher explained it well?
30. If you can't work a puzzle, is it more likely to happen
--- a. because you are not especially good at working puzzles, or
--- b. because the instructions weren't written clearly enough?
31. If your parents tell you that you are bright or clever, is it more likely
--- a. because they are feeling good, or
--- b. because of something you did?
32. Suppose you are explaining how to play a game to a friend and he or she learns quickly. Would that happen more often
--- a. because you explained it well, or
--- b. because he or she was able to understand it?
33. Suppose you're not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. Is it likely to happen
--- a. because he or she was more particular than usual, or
--- b. because you answered too quickly?

34. If a teacher says to you, "try to do better", would it be
--- a. because this is something he or she might say to get
pupils to try harder, or
--- b. because your work wasn't as good as usual?

APPENDIX E

Abbreviated Version of Piers-Harris Self-Concept Scale

- | | | |
|--|-----|----|
| 1. I am a good reader. | YES | NO |
| 2. I can draw well. | YES | NO |
| 3. I am among the last to be chosen for games. | YES | NO |
| 4. I cause trouble to my family. | YES | NO |
| 5. I am shy. | YES | NO |
| 6. I give up easily. | YES | NO |
| 7. I am unpopular. | YES | NO |
| 8. I am often afraid. | YES | NO |
| 9. I am cheerful. | YES | NO |
| 10. I am often sad. | YES | NO |
| 11. I am strong. | YES | NO |
| 12. I forget what I learn. | YES | NO |
| 13. I usually want my own way. | YES | NO |
| 14. I like being the way I am. | YES | NO |
| 15. I am good in music. | YES | NO |
| 16. I am a leader in games and sports. | YES | NO |
| 17. My parents expect too much of me. | YES | NO |
| 18. I am good at making things with my hands. | YES | NO |
| 19. I get into a lot of fights | YES | NO |
| 20. I am good looking. | YES | NO |

APPENDIX F
Teacher Ratings

Following are descriptions of two behaviours that may be seen within the classroom. For each child listed below, please indicate, by taking a number off of the 7-point scale and placing it on the appropriate line next to the child's name the extent to which you believe that the behaviour describes that which you typically observe of this child within the classroom. Please note: These behaviours may or may not be independent. Each child may exhibit neither, one or both of them.

Test anxious - Becomes very anxious in evaluation (test) situations. Doesn't seem to do as well on tests as would be expected on the basis of ability displayed within the classroom. Anxiety appears to interfere with performance on tests.

Gives up easily - Easily discouraged if work is not going well. Easily frustrated by difficult work--loses motivation, stops trying. If failure occurs on one part of a task, decides that failure is certain on the entire task and just gives up.

1	2	3	4	5	6	7

<u>Not at</u>	<u>rarely</u>	<u>seldom</u>	<u>occasion-</u>	<u>sometimes</u>	<u>often</u>	<u>very true</u>
<u>all true</u>			<u>ally true</u>			<u>of this</u>
<u>of this</u>			<u>of this</u>			<u>child</u>
<u>child</u>			<u>child</u>			

APPENDIX G

Verbatim Instructions for Phase 1

18

"My name is _____ and I go to school at the University. I want to find out about children, like you, and how you feel and think about many things. Today I'm going to be asking you some questions. This is not a test, though. These questions are different from the usual questions you have to answer in school because these questions are about the way you feel and think about many things and so there are no right or wrong answers, and no good or bad answers. People think and feel differently." For example, if I asked you this question "Do you like to play ball?", some of you would say "yes" and some of you would say "no". Your answer depends on how you really think, but neither answer is right or wrong, better or worse. The best answer is the one that is the way you really think.

The questions you'll be answering for me today are all about you, and no one but myself will see your answers to these questions-- not your teacher, not your principal, not your parents. And because the way you think and feel is nobody else's business, I want you to make sure that nobody else can see your answers and that you don't look at anyone else's answers.

I'm going to read the questions out loud and I want you to follow along in your booklets. Please stay with me and do not work ahead. Remember, listen carefully to each question and mark the answer that you decide shows how you think and feel. If you don't understand a question, ask me about it. Answer every question even if some are hard to decide, but do not mark more than one answer to any question. Only you can tell me which answers are right for you, so I hope you will mark the way you really feel inside.

For the first set of questions, you will put a circle around either YES or NO, depending on how you feel.

.....
For these next questions, I want you to put an "X" on the line next to the sentence that best describes your feelings and ideas during the PAST TWO WEEKS.

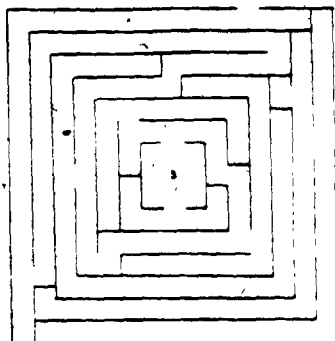
.....
For these next questions, I want you to put an "X" on the line next to the choice that finishes off the sentence the way you really feel.

.....
For these next questions, put a circle around YES or NO, depending on how you feel."

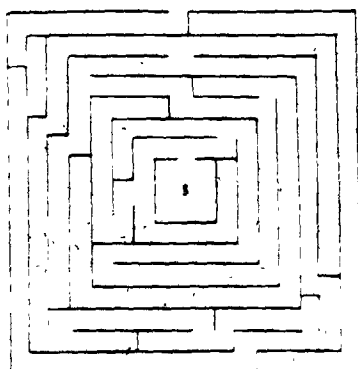
.....

APPENDIX H

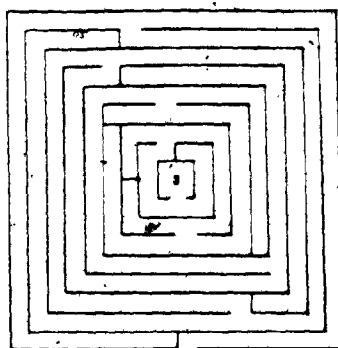
Mazes

PRACTICE MAZES

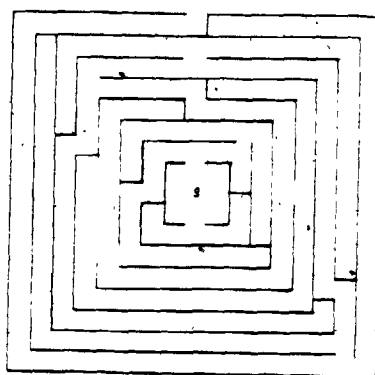
I



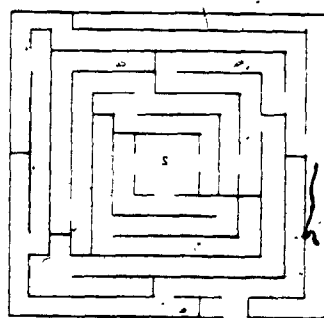
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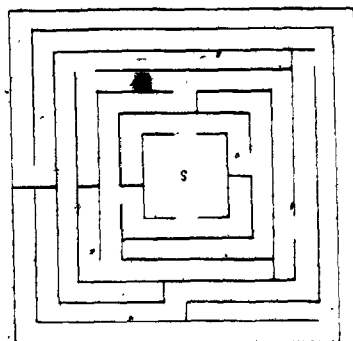
III

PREFAILURE MAZES

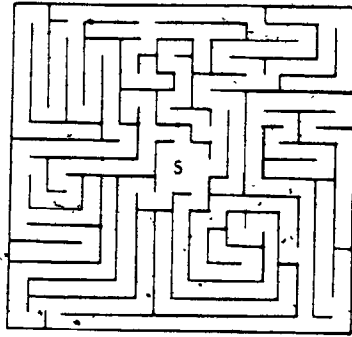
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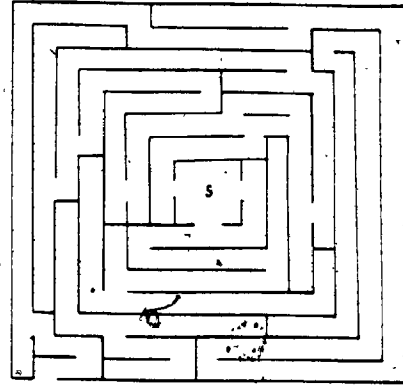
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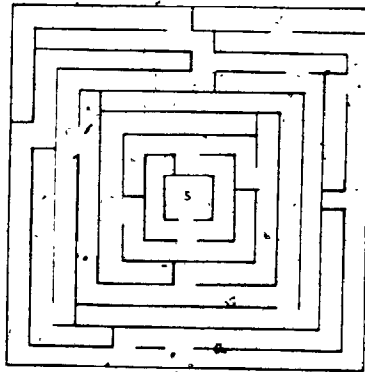
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FAILURE MAZES

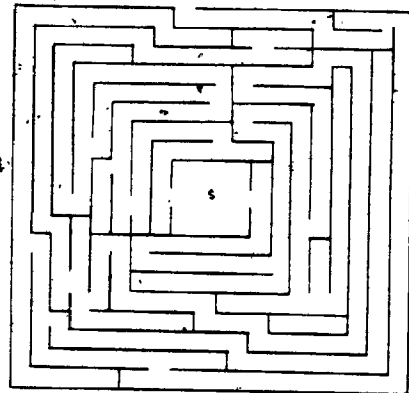
I



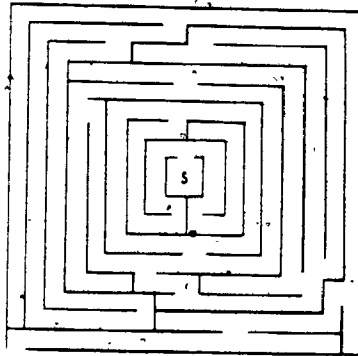
II



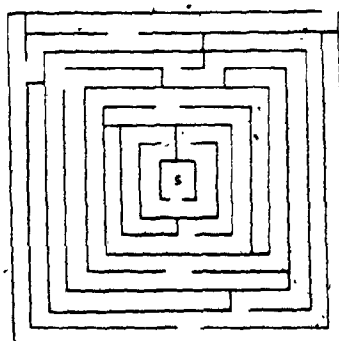
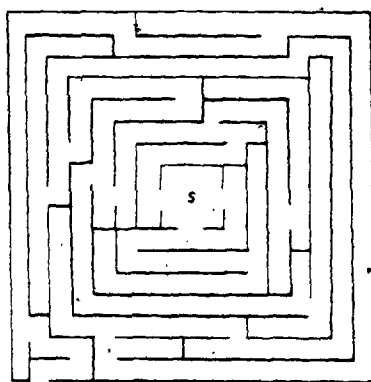
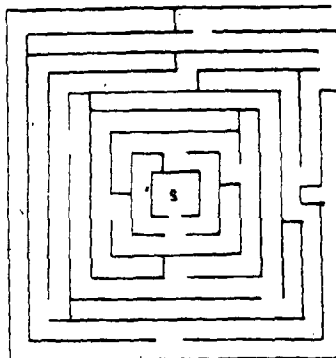
III

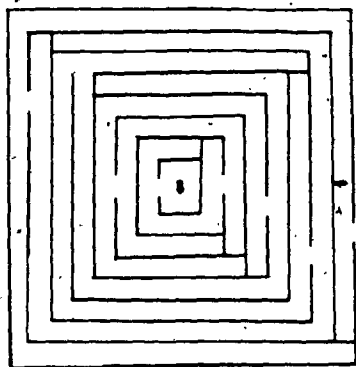


IV

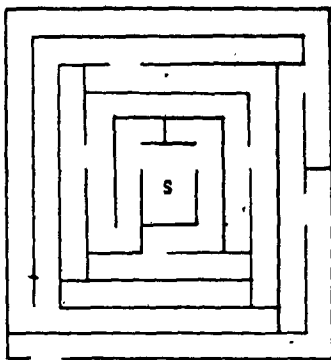


V

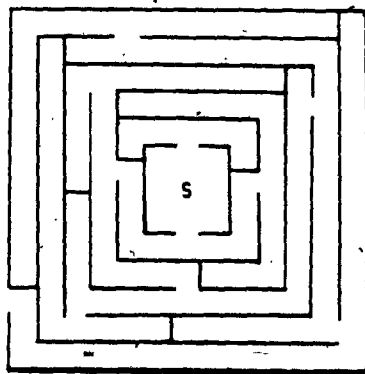
POSTFAILURE MAZES

FINAL MAZES

I



II



III

APPENDIX I

Verbatim Instructions for Phase 2

"My name is _____ and today I'm interested in seeing how you can do on some maze puzzles--puzzles that look like this. I hope you'll have some fun doing them, but, if at any time you decide you'd rather not do any more puzzles and you'd like to go back to the classroom, that's O.K. too. Just let me know.

Now you probably know how to do puzzles like this--they're often in puzzle books that kids try. But I'm going to explain it anyway, just so I'm sure that everyone is starting with the same idea. To do these mazes, you always start in the centre at the "S". "S" stands for start, and you draw your way through, as quickly as you can, to the one way to get out of the maze. You see, there's always only one way out. Sometimes it's helpful to think of this as if it would be a street map and you're going to be driving a car through these streets as quickly as you can. These black lines are like curbs, so you want to try to avoid bumping into curbs and driving over curbs and you can't go through a curb to get from one street to another. There are also some dead end streets. You don't want to go into them because they don't take you anywhere so they'll just waste your time. If you do draw your way into a dead end street, you'd have drive back out again. You can't just lift up your pencil and put it down somewhere else. As a matter of fact, one rule about the mazes is that once you begin, you can't lift your pencil off the paper until you're all the way out. And the last thing I'll tell you is that you can stop anywhere along the way for as long as you want to decide which way to go, but you don't want to stop for too long or it'll waste your time. Try this one, it doesn't count but I just want to make sure you do understand how to do the mazes.

.....
We'll be doing some mazes today, and we'll be answering some questions, then we'll do some more mazes and answer some more questions. So, I'll show you what the questions will be like and we'll answer one now.

A lot of the questions will be in this format. There'll be some questions, like "How would you describe your mood right now" and underneath it is this thing I call a 7-point scale, because it has those 7 points on it. On one end of a 7 point-scale is some words, like "very sad", and at the opposite end is the opposite word, like "very happy". And in between are all the feelings that go in between, like a 2 would be "sad" and a 3 would be "a little sad" and 4 would be "not too bad", 5 would be "a little happy", 6 would be "happy" and 7 is "very happy". You use the 7-point scale to answer the question by putting an "X" on top of one of those dots to make the answer right for you. Now try this one. How well do you expect to do on these mazes?

Now, I find that with mazes, it takes a little while before you get going as quickly as you can. So I have 3 practice mazes for you to try, so you can get warmed up. These ones don't count. I have a timer, and I will time them, but the time doesn't count for anything. It's just for your information. So you'll know how long it takes you to finish the mazes.

[3 practice mazes]

Now that you've had some practice, we'll begin what I call the maze test. The maze test consists of 14 more mazes and I'm giving the same test to about 100 boys and girls your age. So I'll be able to compare how you do to how other kids your age do. For these mazes, you can either pass or fail each maze. If you aren't finished in 60 seconds, I'm going to stop you and you failed that maze. I'll put a red X on your score card beside that maze number, and that will let me know, when I look over your score card that you didn't finish that maze in time. If you do finish in less than 60 seconds, then you passed the maze and I'll write down the amount of time that it took you as your score. So a smaller score is better. And if you're really fast, and you finish in less than 30 seconds, then I'll put a black circle around your score and that will let me know, when I look over your score card that you were really fast on that one. At the end I'll add up all the scores to get a total score that I can compare to all the other kids.

[3 prefailure mazes]

Now we'll answer some more questions.

[page of ratings]

These stars are like a reward you can give yourself for your performance so far. They're like the stars that a teacher might put on a kid's work if the work was good. I want you to use the stars to give yourself a reward for your performance on the mazes so far. You can circle any number between 0 and 10. If you were to give yourself all 10 stars, you would be saying that you think you did the best job possible so far. If you give yourself 0 stars or only a small number, that means you're saying that you don't think you did a good job at all. How many stars do you want to circle for yourself?

These unhappy faces are the opposite. If the stars are a reward, these are like a punishment. If a teacher was to put these on a kid's work, the teacher would be saying that the kid did a pretty bad job. If you were to give yourself all 10, you'd be saying that you think you did the worst job possible so far. And if you give yourself none, or only 1 or 2, you're saying that you don't think you did a bad job at all. How many unhappy faces do you want to give yourself?

Now we'll do more mazes. These yellow [blue] mazes came from one puzzle book that I had and these blue [yellow] mazes came from a different book. That's why they're on a different colour paper. But you do them exactly the same.

[4 failure mazes]

[page of ratings, start & unhappy faces--
rating total performance so far]

For my study, I'm interested in how kids do on maze puzzles but I'm also interested in finding out, when kids have trouble, what makes those mazes troublesome. Now you seem to have had trouble since we started the blue [yellow] mazes, so we'll answer some questions about why you're having trouble and then we'll finish off the pile of mazes.

I've thought of some possible reasons and I've put them down in the form of questions. For example, do you think it was because these mazes were too hard? You'll answer each question by taking a number off the 7-point scale and putting it on the line following the question. If you thought that that's definitely not the reason why you'd mark a 1 on the line, and if you thought that that's definitely the reason, you'd mark a 7 on the line.

[6 specific attribution ratings]

Was it all your own fault that you had trouble with those mazes? If you put an X by number 1, you'd be saying "No, it was not my fault at all. It was only because of someone or something that had nothing to do with me." For example, if I picked the very hardest mazes out of the blue (yellow) book, that wouldn't be your fault. Or if there was too much noise in the hallway and it distracted you, that wouldn't be your fault. But if you put an X by number 7, you'd be saying that your problems with the mazes were all your own fault.

[5 global attribution ratings]
[finish remaining mazes]

[last page of ratings, stars & unhappy faces--
rating total performance]

On this page are a list of thoughts that some kids may have had while working on the mazes. How often did you have each of the following thoughts while you were working on the mazes?

[final 2 ratings]

I want to tell you that you did very well here today. I've tested a lot of kids and the average number of black circles that kids get is 3, and some kids don't get any. Everyone gets some red X's because some mazes were just too hard to finish in 60 seconds.

Now I'm going to ask you a favour. Please don't talk about the test until everyone has had a turn. Otherwise it won't be fair and I won't be able to compare your score with those of the other kids."

APPENDIX J

Performance Ratings during Phase 2

i)

How well do you expect to do on these mazes?

1	2	3	4	5	6	7
very poorly			very well			

ii)

How would you describe your mood right now?

1 2 3 4 5 6 7

very
sadvery
happy

How much do you like doing these mazes?

1 2 3 4 5 6 7

I do
not
like it
at allI like
it very
much

How well do you think you are doing so far?

1 2 3 4 5 6 7

very
poorlyvery
well

How well do you think other children in your class would be doing so far?

1 2 3 4 5 6 7

very
poorlyvery
well

How well do you think you will do if I give you some more of these mazes?

1 2 3 4 5 6 7

very
poorlyvery
wellHow many stars do you want
to circle for yourself?

How many unhappy faces do
you want to give yourself?

☹ ☹ ☹ ☹ ☹ ☹ ☹ ☹ ☹

iii)

Why do you think you had trouble with the mazes?

1	2	3	4	5	6	7
That's defin- itely <u>not</u> why	That doesn't seem to be why	That's probably <u>not</u> why	That could be why	That's probably why	That seems to be why	That's defin- itely why

Do you think it was because those mazes were too hard? -----

Do you think it was because you aren't good at doing mazes? -----

Do you think it was because you weren't trying hard enough? -----

Do you think it was because you weren't lucky--things just didn't
work out well? -----Do you think it was because you weren't in the mood to do mazes
today? -----

Do you think it was because of the mazes that I chose? -----

iv)

Was it all your own fault that you had trouble with those mazes?

1	2	3	4	5	6	7
No it was not my fault at all. Only because of some-one or something that had nothing to do with me	Doesn't seem to be my fault	Probably <u>not</u> my fault	Could be my fault	Probably my fault	Seems to be my fault	<u>Yes</u> , it was all my own fault. Nothing to do with anyone or anything else

Would you have more trouble than other children with those mazes?

1	2	3	4	5	6	7
No, all children will have as much trouble as me	Don't think I'll have more trouble	Probably won't have more trouble	Might have more trouble	Probably have more trouble	I think I'll have more trouble	<u>Yes</u> , I will definitely have more trouble than other children

If I were to give you these mazes again at another time, would you have trouble with them then?

1	2	3	4	5	6	7
<u>No</u> , I would definitely never again have trouble with those mazes	Don't think I'll ever have trouble	Probably wouldn't have trouble again	Might have trouble again	Probably always have trouble	I think I'll always have trouble	<u>Yes</u> , I will definitely always have trouble with those mazes

If you were to try a different kind of puzzle now, would you have trouble with it?

1	2	3	4	5	6	7
<u>No</u> , I would have no trouble with a different puzzle now	Don't think I'll have trouble	Probably wouldn't have trouble	I might have trouble	Probably would have trouble	Think I'll have trouble	<u>Yes</u> , I would have trouble with any kind of puzzle now

Is there anything that you can do so that you would do better on those mazes?

1	2	3	4	5	6	7
<u>Yes</u> , there is definitely something I can do better	I think there's something I can do	Probably something I can do	There might be something	Probably nothing I can do	I think there's nothing I can do	<u>No</u> there is definitely nothing I can do to do better

v)

How much did you like doing these mazes today?

1	2	3	4	5	6	7

I <u>did</u>						I <u>liked</u>
<u>not</u>						it <u>very</u>
<u>like</u>						<u>much</u>
it at						
all						

How well do you think you did altogether?

1	2	3	4	5	6	7

very						very
poorly						well

How well do you think other children in your class will do altogether?

1	2	3	4	5	6	7

very						very
poorly						well

How well do you think you would do if I were to give you some more of the blue mazes now?

1	2	3	4	5	6	7

very						very
poorly						well

How well do you think you would do if I were to give you some more of the yellow mazes now?

1	2	3	4	5	6	7

very						very
poorly						well

-vi)

Cognitive Interference Questionnaire

How often did you have each of the following thoughts while you were working on the mazes?

- 1 - never
- 2 - once
- 3 - a few times
- 4 - often
- 5 - very often

___ I thought about how poorly I was doing.

___ I wondered what the tester would think of me.

___ I thought about how I should work more carefully.

___ I thought about how other children will do on these mazes.

___ I thought about how hard these mazes are.

___ I thought about whether I'm smart enough to do these mazes.

___ I thought about how confused I am.

___ I thought about things that had nothing to do with solving the mazes.

___ I thought about just giving up.

___ I thought that there's no use in trying.

vii)

How satisfied are you with your performance here today?

1	2	3	4	5	6	7
very dissat- isfied			very satisfied			

How would you describe your mood right now?

1	2	3	4	5	6	7
very sad			very happy			

APPENDIX K

Sequences of Slides for CPT Session

Sequence 1*

2S	5C	6C	6S	3C	5C	4C	4C	8S	4C
6C	2C	2S	4S	3S	9S	10C	10C	8S	8C
5S	6S	10C	10C	9S	4S	4C	3S	7C	9S
9C	2C	3S	3S	7S	5S	6C	5C	5S	8C
2C	5C	3C	3C	4S	10S	2C	8C	8C	10S
6S	2C	7C	7S	3S	9S	7S	7S	9S	10S
10C	4C	5S	5S	9C	2C	5S	8C	8S	9C
2S	6C	6C	7C	7S	3C	3C	2S	6S	4S

Sequence 2*

4S	3C	7C	4S	4S	2S	4C	5S	5C	3S
2C	3C	9C	5C	5C	9S	7S	9C	9C	8C
5S	10S	10S	4C	10C	9S	9C	6C	2S	2S
9C	7C	8C	2C	2S	10S	8C	8S	2S	5S
4C	4S	6S	3C	3C	6C	7S	9S	9C	4C
4S	9S	10C	3S	8S	8S	2C	8S	5C	5C
7S	10C	6C	6S	4C	7C	7C	6C	8S	7C
7S	10S	3S	6S	6S	7C	8C	8S	6S	3S

*S = spade
C = club

APPENDIX L

Verbatim Instructions for CPT Session

"Before we start, I want you to know that what we do in here is voluntary, so if you decide you don't want to do anymore, that's O.K. Just let me know.

Today we are going to do something that will show me how good you are at paying close attention. This is something brand new that I just made up.

I want you to watch that screen very carefully. On the screen will be flashing slides of playing cards, from a deck of cards. They'll be flashing very fast. Your job is to watch the screen and if you see a card that is exactly the same as the one right before it, that is both the same number and the same suit, I want you to press the button as quickly as you can, and then let go right away.

Now remember, you only press if the two cards are exactly the same, and if they come right after each other. If it's the same number, but not the same suit, don't press. If it's the same suit, but not the same number, don't press. If there's one card, like a two of spades, then a different card, then another two of spades, don't press.

These things here are clocks. They'll keep running, one, then the other, if you don't press the button [demonstrate]. But when you press, like this, then the clock stops. I'll know to read the clock and that will tell me how long it took you to press the button. Any questions? Alright then, we'll try some. Because you've never done anything like this before, these ones will be practice and they don't count.

[2 trials]

Now that you've had some practice, we're ready to begin the test. The test is 6 more sets of slides. I want to see how good you are compared to other children your age. The test will be the same as the practice, except for one difference. This time you'll get a score and let me tell you how I'll figure out your score.

Four times, as you're watching the slides I'll let you know whether you're doing good or bad. Doing good means that you are pressing quickly, pressing every time that two slides are exactly the same, and never pressing if two slides are different. Doing bad means that you are too slow, or that you forget to press when two slides are exactly the same, or that you press even when two slides are different. If I think you're doing good, you'll hear this sound, and I'll put a checkmark on your scorecard. If I think you're doing bad, you'll hear this sound, and I'll put an X on your scorecard. Each time, then, you'll have 4 marks on your scorecard. Four checkmarks means you did very good and you get an A. Three checkmarks and one X means you did good and you get a B. Two checkmarks and two X's means you did fair and you get a C. One checkmark with three X's means you did poor and you get a D. And if you get all 4 X's you did very poor and that's an F.

[4 trials]

O.K. Let's stop here and take a break. While you're resting, could you fill out this 7-point scale to let me know how well you think you are doing on this test? (The item read "How well do you think you are doing on this test?" with ratings from "1" - very poorly to "7" - very well).

[2 final trials]

You really improved. Because this is a pretty hard test, I'm only counting the top three scores. You got a C, a B and an A. Overall, that's a B, so that's a good score. I haven't tested everyone yet so I don't know what the average will be but so far it seems to more like a C.

Now, I want you to do me a favour. Please don't tell anyone who hasn't had a turn yet what this test is all about. I want everybody to come in fresh, with no ideas about what we do."

APPENDIX M
Scoring System for CPT Trials

		Feedback*				Score
Test Trial	1	X	✓	X	X	D - poor
	2	X	X	X	X	F - very poor
	3	✓	X	X	X	D - poor
	4	X	✓	X	✓	C - fair
	5	✓	✓	X	✓	B - good
	6	✓	✓	✓	✓	A - very good

*X = doing poorly
 ✓ = doing well

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